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UNITED ENGINEERING & FOUNDRY COMPANY

PITTSBURG, PA., U.S.A.

Composed of

McGILL & COMPANY DEPARTMENT; LINCOLN FOUNDRY COMPANY DEPARTMENT; THE LLOYD BOOTH COMPANY DEPARTMENT, PHELPS STREET PLANT; THE LLOYD BOOTH COMPANY DEPARTMENT, OAK STREET PLANT; CHILLED ROLL FOUNDRY COMPANY DEPARTMENT; FRANK-KNEELAND MACHINE COMPANY DEPARTMENT

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CONTENTS

Introduction	1–38
Rolling Mills	39–131
Roller Tables	132–139
Manipulators	140–141
Hydraulic Shears	142–153
Intensifiers	154–157
Plate Shears	158–173
Bloom and Slab Shears	174–181
Squaring Shears	182–191
Doubling Shears	192–193
Lever Shears	194–223
Vertical Shears and Punches	224–257
Rail Straightening Machines	249–250
Horizontal Beam Straightening Machines	251
Hot and Cold Metal Saws	258–275
Roll Turning Lathes	276–293
Roller Straightening Machines	294–317
Squeezers	318–319
Accumulators	320–321
Grinding Pans	322–323
Galvanizing Machine	324
Corrugating Machine	325
Hydraulic Cranes	326
Special Machines	327
Cars	328–333
Rail Cambering Machines	334–335
Tube Works Machinery	336–381
Pipe Crushing and Shearing Machines	382–384
Steel Castings and Gears	386–400

UNITED ENGINEERING AND FOUNDRY COMPANY

ENGINEERS, FOUNDERS AND MACHINISTS, PITTSBURG, PA., U.S.A.

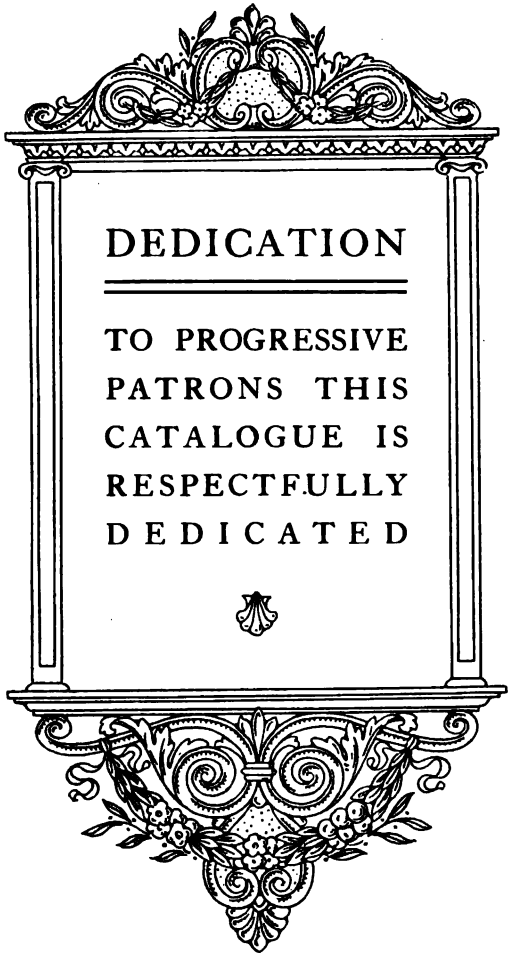
SAND, CHILLED AND STEEL ROLLS, IRON, STEEL AND TUBE WORKS MACHINERY, INCLUDING

Blooming Mills
Universal Mills
Plate Mills
Slabbing Mills
Sheet Mills
Tin Mills
Guide Mills
Structural Mills
Skelp Mills
Muck Bar Mills
Continuous Mills
Hydraulic Shears
Lever Shears
Guillotine Shears
Vertical Shears
Plate Shears
Squaring Shears

Doubling Shears
Punches
Straightening Machines
Roll Lathes
Hot Saws
Cold Saws
Squeezers
Ore Mills
Accumulators
Ash Cars
Slag Cars
Billet Cars
Ingot Cars
Hydraulic Cranes
Corrugating Machines
Ingot Strippers
Ingot Tilters

Mill Tables
Traveling Tables
Tilting Tables
Conveyors
Intensifiers
Manipulators
Plate Bending Rolls
Sand Rolls
Chilled Rolls
Steel Rolls
Miscellaneous Iron, Brass and Steel Castings
Special Machinery
Bar Pullers
Skelp Bending Machines
Charging Troughs
Coupling Benders

Coupling Rolling Machines
Coupling Expanders
Coupling Tappers
Cross Rolls
Mandril Extractor
Pipe Cutters
Pipe Straighteners
Scarfing Machines
Size Rolls
Clipping Shears
Coupling Iron Shears
Skelp Slitting Shears
Pipe Testing Machines
Welding Rolls
Threading Machines
Machine Molded Steel Gears


DEDICATION
TO PROGRESSIVE
PATRONS THIS
CATALOGUE IS
RESPECTFULLY
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INTRODUCTION

THIS Company was organized in the year 1901 and has justly earned the name of being the foremost and largest manufacturer in the world of rolls and rolling mill machinery for iron, steel and tube works. It is a consolidation of the Lloyd Booth Company, of Youngstown, Ohio, Frank-Kneeland Machine Company, Lincoln Foundry Company, McGill & Company, all of Pittsburg, and the Chilled Roll Foundry Company, of Vandergrift, Pennsylvania. These individual companies were manufacturers of rolls and rolling mill machinery, and this consolidation has effected a large saving in duplication of designs, patterns, chemical and metallurgical investigation.

While each department has still kept its same shop management, the engineering and sales departments have been consolidated in well equipped offices in the Farmers Bank Building, Pittsburg, Pennsylvania.

Since the organization of this company, the several plants have been enlarged, and improved facilities have been added with a new equipment of machine tools, such as motor-driven high-speed lathes, boring mills, milling machines, etc. The company has also acquired the plant of the Mahoning Foundry and Machine Company, of Youngstown, Ohio, making some important additions and improvements, installing air furnaces and roll making equipment, so that the entire roll production of all departments has been nearly doubled.

ENTRANCE TO GENERAL OFFICES

This, with the large capacity for the production of heavy machinery, brass and steel castings of all sizes and machine molded gears, makes it the largest company of its kind in the world.

Customers are welcome at all times to inspect the splendid facilities of the different departments for the production of every kind of heavy machinery.

Utility, character and excellence of design, high grade material and workmanship are the prime factors which have won success for us. Complete records of all designs are kept in fire-proof vaults, and complete machines or parts thereof can be duplicated at any time.

Our Engineering Department is prepared to design and insure the operation of individual machines or complete plants for the production of rolled products of iron, steel or tube works, and also special heavy machinery for other purposes.

PRESIDENT'S AND DIRECTORS' ROOM

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

We have designed complete Blooming, Rail, Structural, Billet, and Sheet Bar Mills, from the soaking pits or heating furnaces to the finishing end, and among the most notable contracts recently completed are the Continuous Blooming, Rail and Billet Mills for the Indiana Steel Company, of Gary, Indiana; Rail and Structural Mills for the Bethlehem Steel Company, of South Bethlehem, Pennsylvania; Rail Mill for the Tennessee Coal, Iron and Railroad

AUDITING DEPARTMENT

Company, of Ensley, Alabama; Rail Mill and Sheet Bar Mill for the Republic Iron and Steel Company, of Youngstown, Ohio; Blooming and Sheet Bar Mill for the Inland Steel Company, of Indiana Harbor, Indiana; Blooming and Sheet Bar Mill for the Andrews Steel Company, of Newport, Kentucky, and the Blooming Mill for the C. Pardee Works, Perth Amboy, New Jersey.

Our foundries are well equipped with electric traveling cranes of large capacity; these, with ample floor space, melting capacity, large

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

core-drying ovens, etc., put us in a position to make the largest and highest grade of iron, steel and brass castings produced, and we have made a special study of the requirements in this line for iron, steel and tube works; we are also prepared to furnish machine molded steel gears up to 20 feet diameter. See page 397.

Each one of our plants has a modern pattern shop, equipped with improved machinery for the class of work intended to be done.

We also have large storage buildings for patterns at each plant where our own and our customers' patterns are kept for future use.

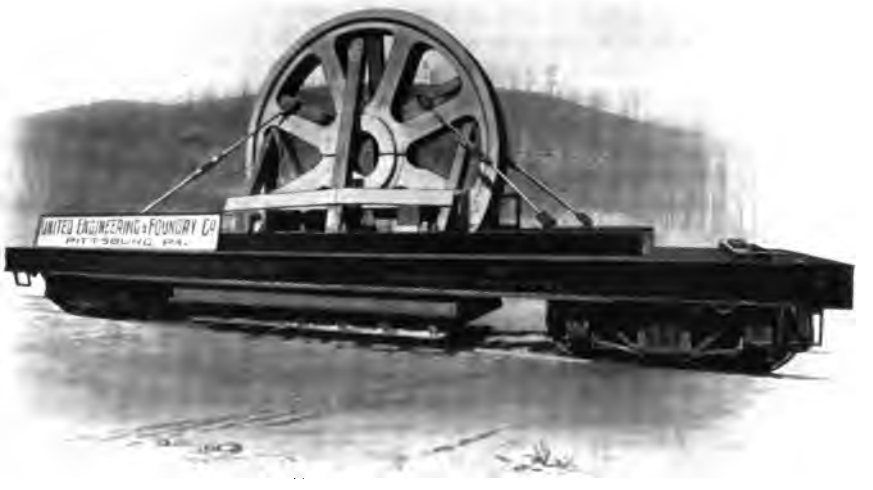
Our machine shops are well equipped with the most modern tools built, and are of such size that we can finish the heaviest castings or forgings made.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

In connection with each machine shop we have a large erecting shop with ample floor and crane capacity, for assembling all machinery so as to insure perfect fitting and operation of all parts before shipment is made.

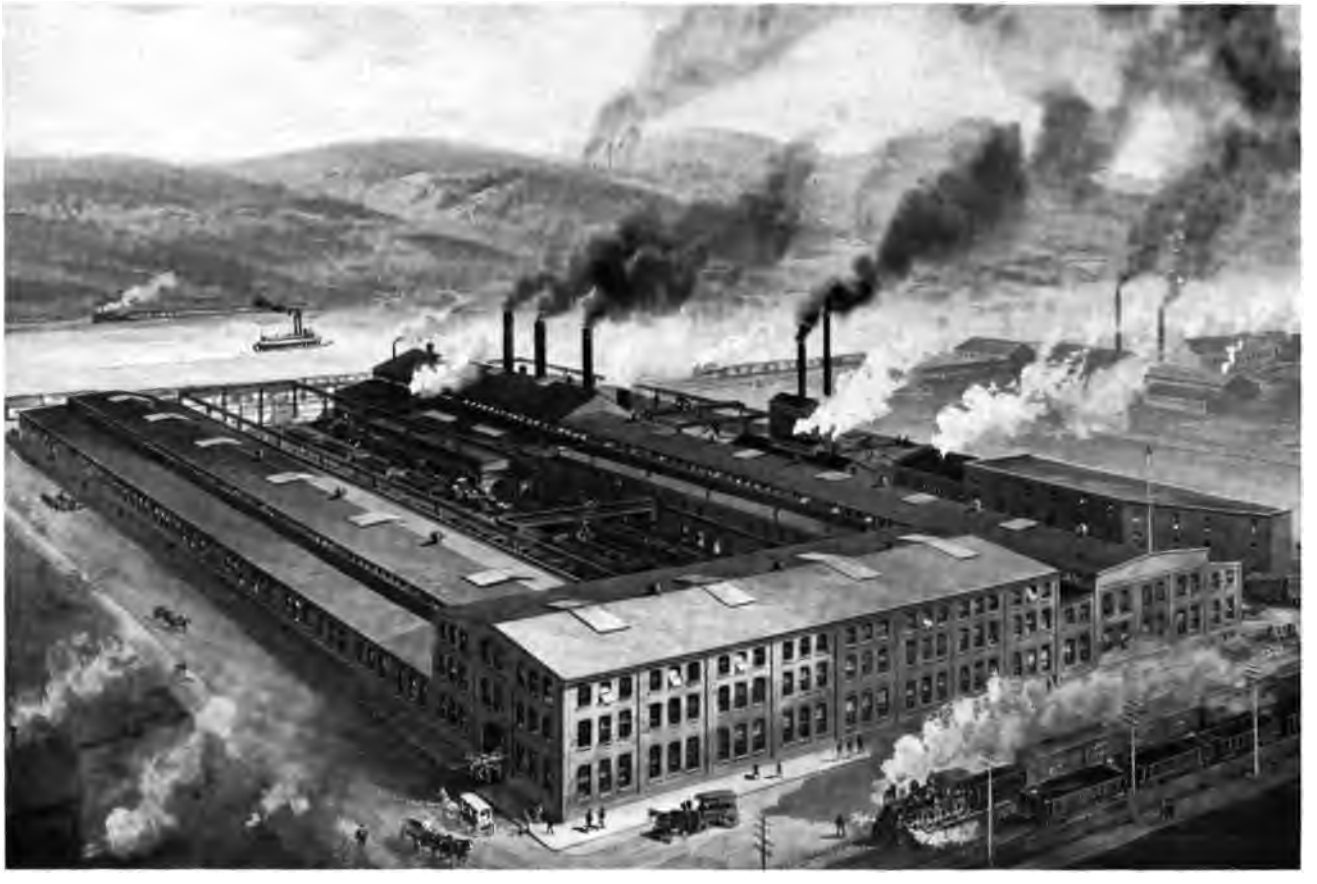
Railroad sidings are run through the center of all departments, giving perfect shipping facilities, and all handling of material is done by electric traveling cranes.

Our plants located in Pittsburg are on the river front, so that we can ship by water when necessary.



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

LINCOLN FOUNDRY DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY, PITTSBURG, PENNSYLVANIA

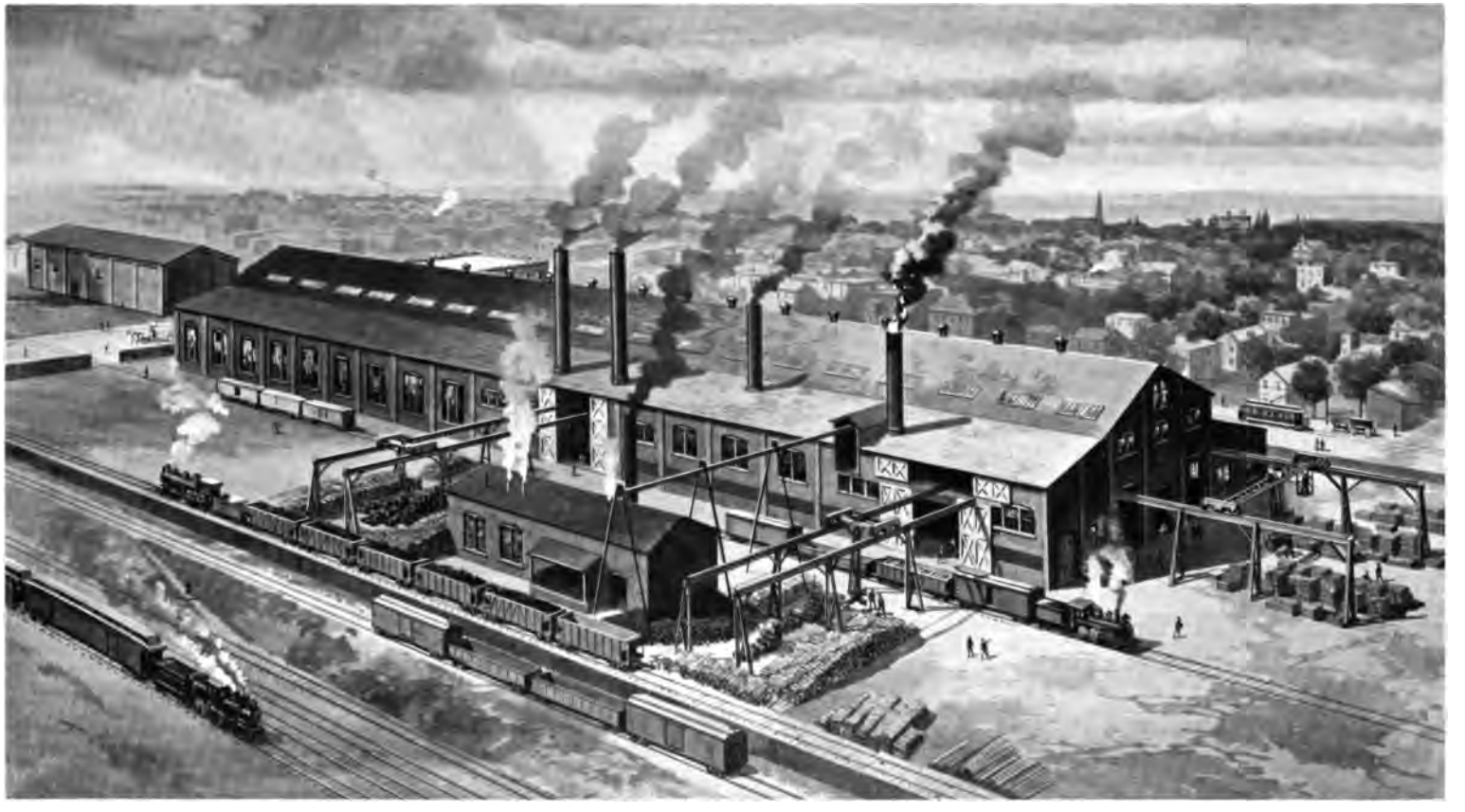


FRANK-KNEELAND MACHINE DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY, PITTSBURG, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

PHELPS STREET PLANT—THE LLOYD BOOTH DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY, PITTSBURG, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.



OAK STREET PLANT—THE LLOYD BOOTH DEPARTMENT
OF UNITED ENGINEERING AND FOUNDRY COMPANY, PITTSBURG, PENNSYLVANIA

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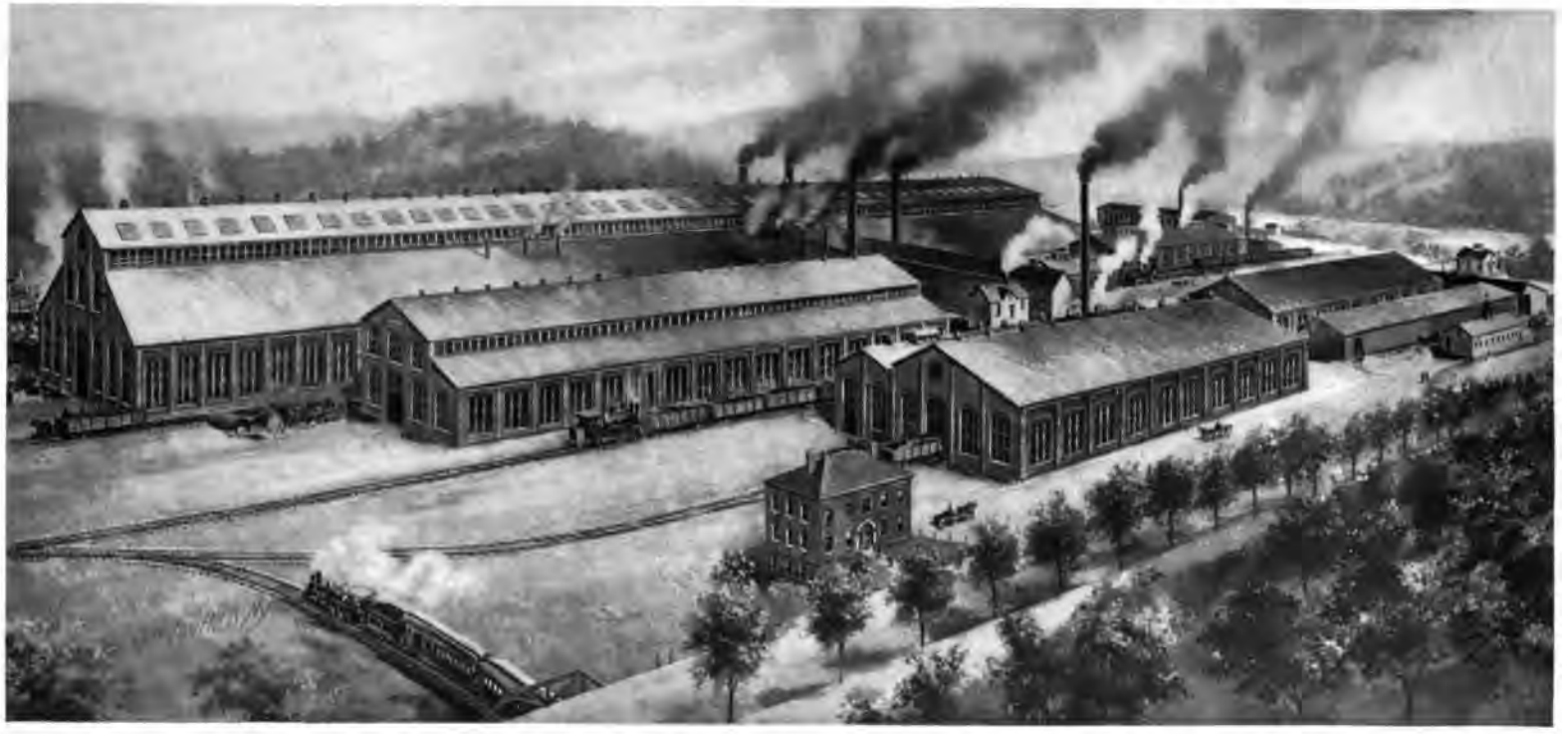
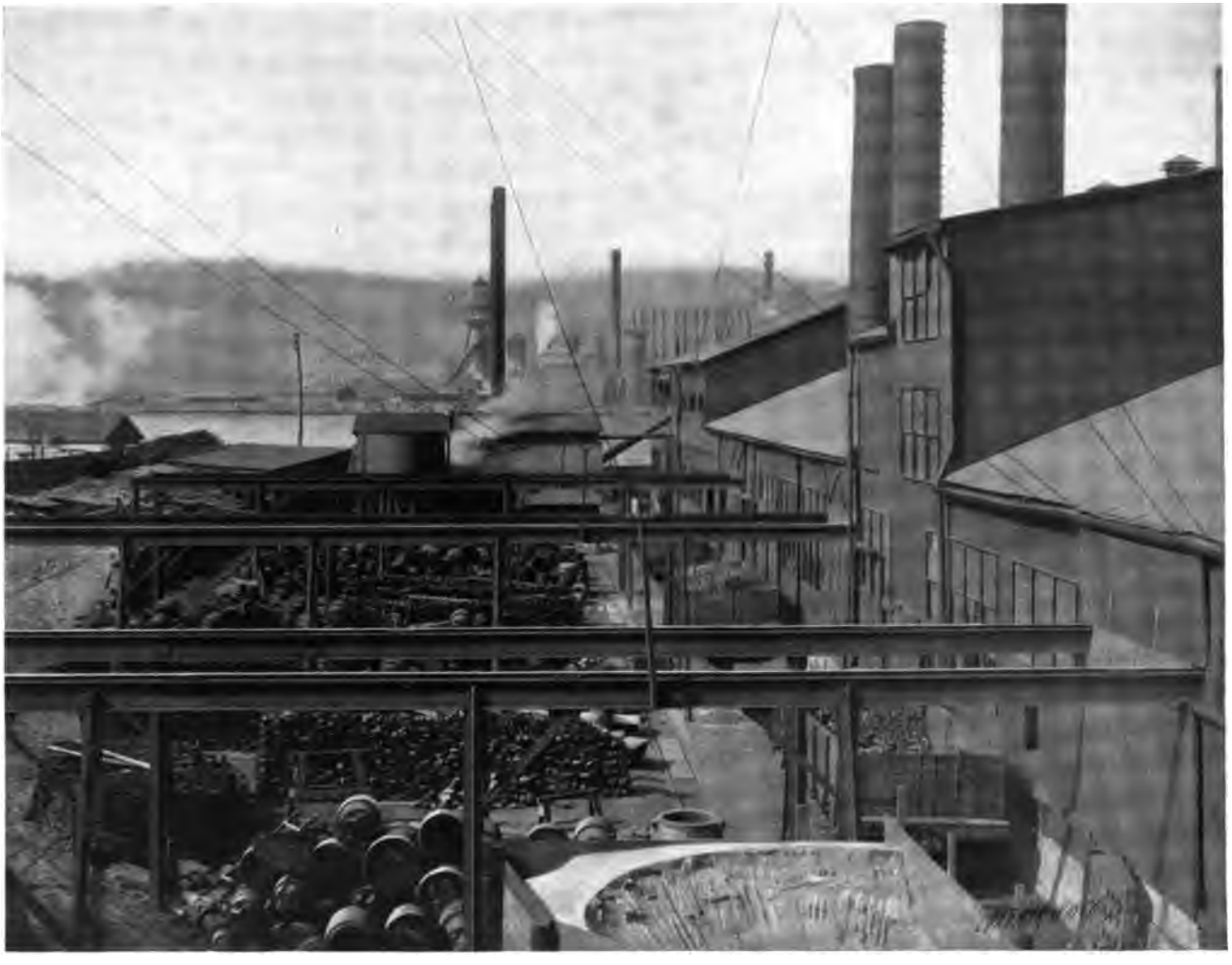
PITTSBURG, PA.



CHILLED ROLL FOUNDRY DEPARTMENT

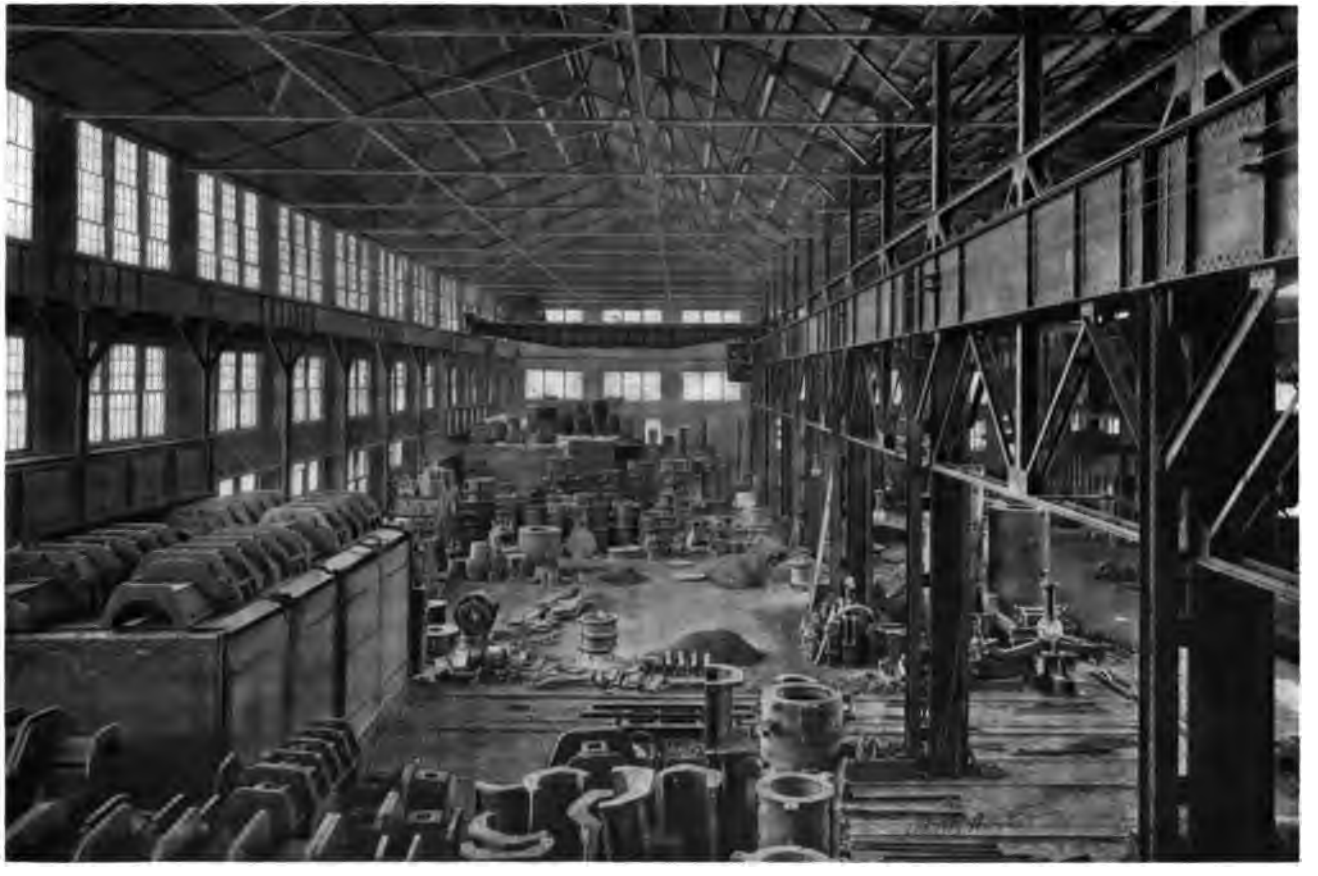
UNITED ENGINEERING AND FOUNDRY COMPANY, PITTSBURG, PENNSYLVANIA



STOCK YARD—LINCOLN FOUNDRY COMPANY DEPARTMENT

CUPOLA AND AIR FURNACES — LINCOLN FOUNDRY COMPANY DEPARTMENT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.



CORE OVENS AND MOLDING FLOOR — LINCOLN FOUNDRY COMPANY DEPARTMENT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ROLL CASTING PIT—LINCOLN FOUNDRY COMPANY DEPARTMENT

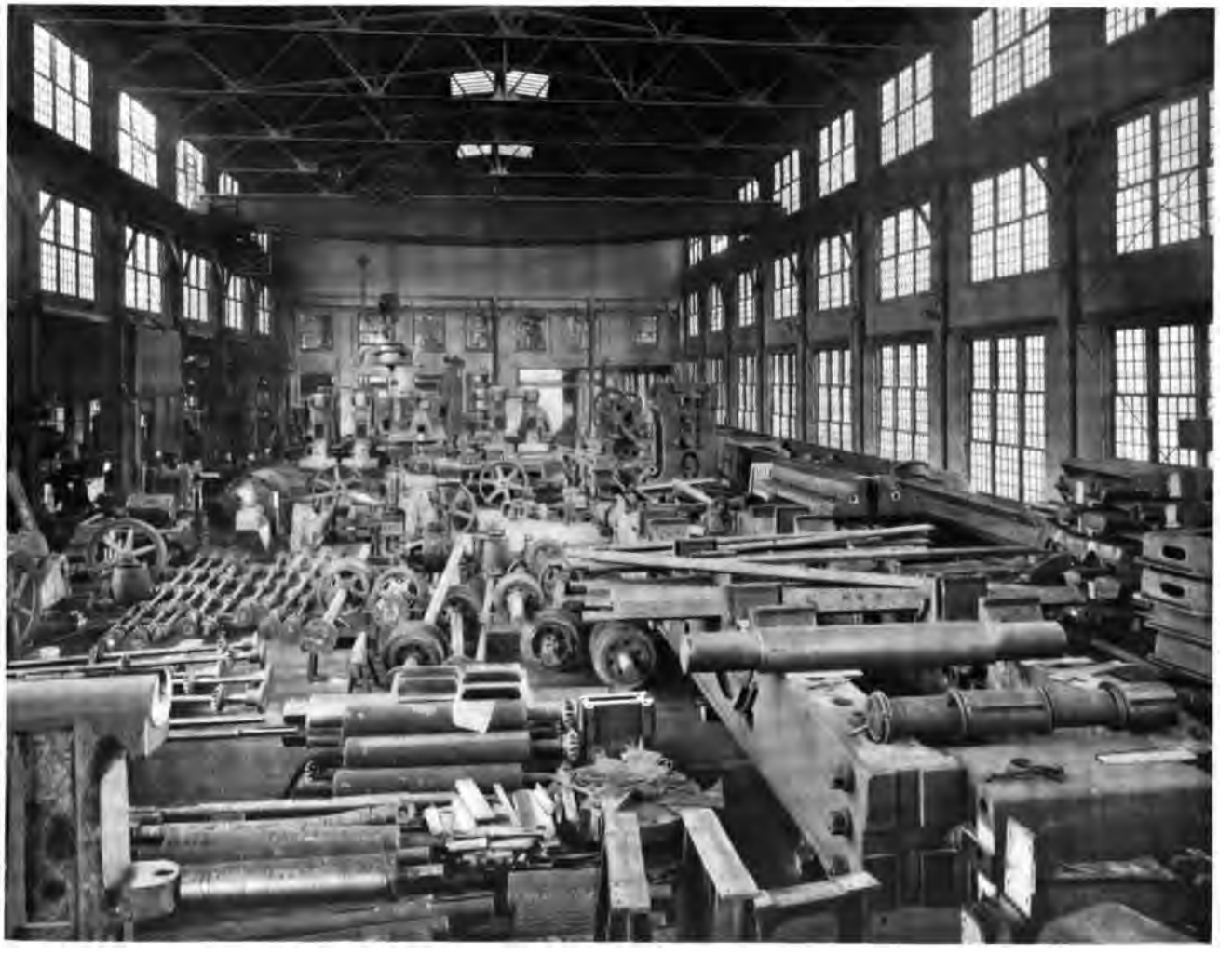
UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ROLL TURNING SHOP—LINCOLN FOUNDRY COMPANY DEPARTMENT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ERECTING SHOP — FRANK-KNEELAND COMPANY DEPARTMENT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

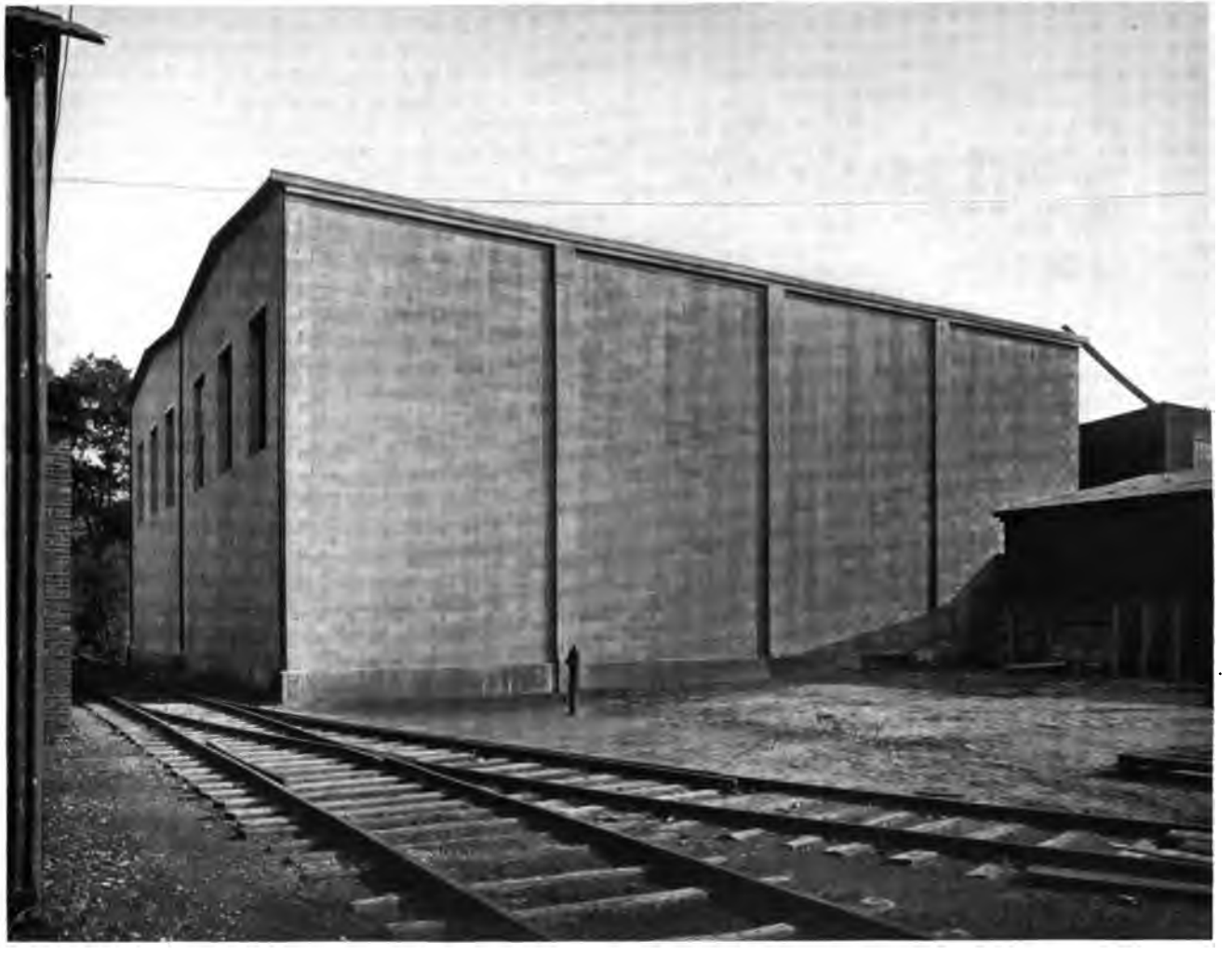


ERECTING SHOP — FRANK-KNEELAND COMPANY DEPARTMENT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

TOOL SHOP — FRANK-KNEELAND COMPANY DEPARTMENT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.



PATTERN STORAGE BUILDING—CHILLED ROLL FOUNDRY DEPARTMENT

STOCK YARD—CHILLED ROLL FOUNDRY DEPARTMENT

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CHILLED ROLL FOUNDRY — CHILLED ROLL FOUNDRY DEPARTMENT

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OPEN-HEARTH FURNACES—CHILLED ROLL FOUNDRY DEPARTMENT

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PITTSBURG, PA.

STEEL CASTING MOLDING FLOOR—CHILLED ROLL FOUNDRY DEPARTMENT

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PITTSBURG, PA.

BRASS FOUNDRY — CHILLED ROLL FOUNDRY DEPARTMENT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ROLL TURNING AND MACHINE SHOP — CHILLED ROLL FOUNDRY DEPARTMENT

DRAFTING ROOM

ROLL DEPARTMENT

MODERN progress received its greatest impetus from the time metal was first shaped between rolls, and the continued improvement of this process rendered possible and created a demand for the metal products that are today indispensable to our commercial success and general comfort. The engineer, the chemist, and the metallurgist have all contributed their knowledge, to the end that steel making has been made a science.

The evolution of the rolling mill from a pair of rolls driven by water power, rolling small blooms, to the gigantic plants of the present day, whose varied products meet all the demands of commerce, marks the grandest era of material progress the world has known.

Our roll department has kept pace with this evolution. We are prepared to design and furnish rolls for rolling all classes and sizes of material from the rough to the

ROLL IN ROLL LATHE

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

finished product. Our roll foundries are all equipped with the most modern appliances for making and handling rolls, and with our metallurgical system and the completeness of our organization, we believe we can produce the best rolls made. We are the "largest roll makers in the world, and makers of the largest rolls," and, with our large capacity, are always in position to make prompt deliveries.

Our patented even-depth water chill hot rolls for sheet and tin mills, and our "Lincoln Special" rolls for shape work are beyond question the best rolls of their kind, while our plate mill rolls are used in all the large plate mills in the country. We also manufacture all kinds of steel rolls, which are given the same careful attention as the iron rolls.

Write for our Roll Catalogue.

CALIPERING ROLLS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

METHOD OF MEASURING DEPTH OF CHILL ON ROLLS

This represents $\frac{9}{16}$-inch clear chill. When depth of chill is designated, it is assumed to mean clear chill

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 339

42 x 152-INCH AND 8 x 10-INCH CHILLED ROLLS

Largest roll makers in the world. Makers of the largest as well as the smallest iron, steel and chilled rolls in use for any purpose

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ROLLING MILLS

WE show herewith a few interior views, illustrating installations of Blooming, Plate, Universal, Sheet and Tin, Continuous, Merchant and Guide Bar Mills, and auxiliary machinery, including tables, manipulators, transfers, shears, saws, etc.

We are equipped to build any type of rolling mill required, from an 8-inch guide mill to the largest plate, blooming, slabbing, universal or continuous mills, and have many of these mills in operation in this and foreign countries, which have been thoroughly tested in every respect, giving us an almost unlimited accumulation of data and shop experience.

Our designs are being continually revised to keep abreast of modern advancement, the various types of mills being built to suit the material rolled and the tonnage required.

Housings, bed plates and other important castings are always made from carefully mixed air furnace iron, and the composition of steel and brass castings and forgings is also carefully watched.

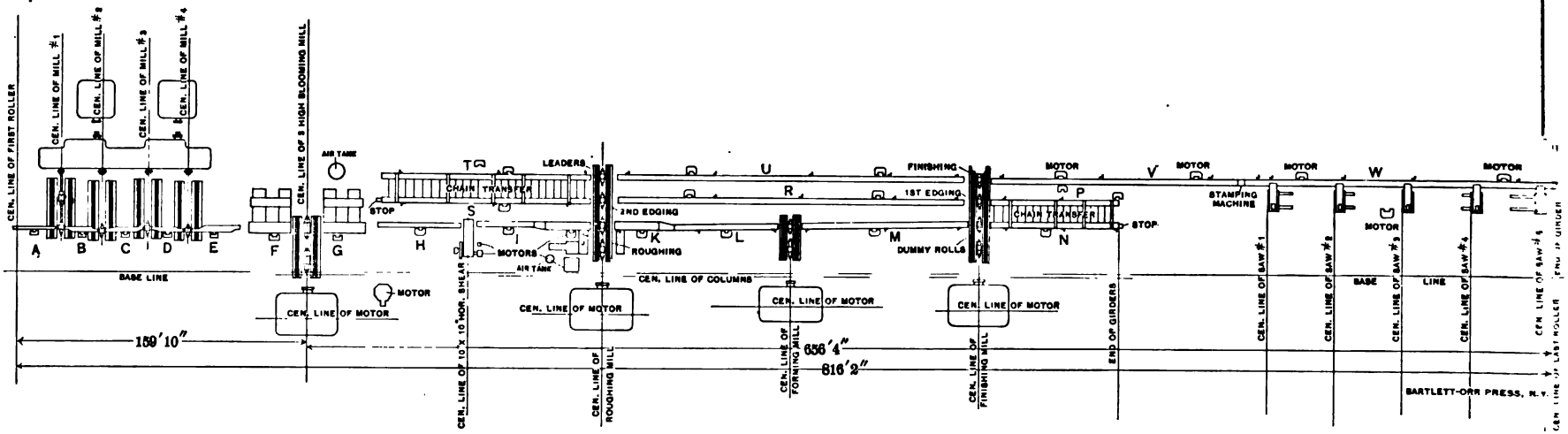
Our sheet and tin mills range in sizes from 12-inch strip rolling cold mills up to the heaviest 28-inch hot mills.

We are prepared to design and build in connection with these mills substantial roller tables driven by either direct-connected engine or electric motor; also all classes of manipulators, transfers, ingot tilters, etc.

We designed and built complete the continuous rail and billet mills for the Indiana Steel Company at Gary, Indiana, which included nine 40-inch and five 32-inch blooming mills; 28-inch finishing mills for the rail mill, and 24-inch and 18-inch finishing mills for the billet mill, together with tables, manipulators, transfers, shears, saws, etc. We also designed and built complete the 28-inch rail mill and 28-inch structural mill for the Bethlehem Steel Company and 28-inch rail mill for the Tennessee Coal, Iron and Railroad Company, with all auxiliary machinery complete.

We have built a large number of blooming mills, ranging in various sizes from 24 to 44 inches. Among these we mention the following, which we have furnished complete:

Washburn Wire Company	One 24-inch mill
John A. Roebling's Sons Company	One 26-inch mill
Colonial Steel Company	One 26-inch mill
Portsmouth Iron and Steel Company	One 28-inch mill
Indiana Steel Company	Five 32-inch mills
Carnegie Steel Company, Ohio Works	One 34-inch mill
C. Pardee Works	One 34-inch mill
National Enameling and Stamping Company	One 34-inch mill
Andrews Steel Company	One 34-inch mill
American Sheet and Tin Plate Company, Apollo Works	One 34-inch mill
Tennessee Coal, Iron and Railroad Company	One 34 inch mill
American Steel and Wire Company, Worcester Works	One 34-inch mill
American Tube and Stamping Company	One 34-inch mill
Carnegie Steel Company, Newcastle Works	One 36-inch mill
American Steel and Wire Company, Schoenberger Works	One 36-inch mill
New York State Steel Company	One 36-inch mill
Southern Steel Company	One 36-inch mill
Inland Steel Company	One 36-inch mill
Carnegie Steel Company, Homestead Works	One 38-inch mill
Lorain Steel Company	One 38-inch mill
Carnegie Steel Company, Sharon Works	One 38-inch mill
Republic Iron and Steel Company, Bessemer Works	One 40-inch mill
Youngstown Sheet and Tube Company	One 40-inch mill
Monterey Iron and Steel Company, Monterey, Mexico	One 40-inch mill
Indiana Steel Company	Nine 40-inch mills
Illinois Steel Company	One 40-inch mill
Tennessee Coal, Iron and Railroad Company	One 44-inch mill



LARGEST RAIL MILL IN THE WORLD

Designed and built by us for Indiana Steel Company, Gary, Indiana. Consisting of four two-high stands of 40-inch rolls, one three-high stand of 40-inch rolls and seven stands of 28-inch rolls, with stationary, lifting and tilting tables; also transfers, shear, saws, etc. All of this machinery is driven by direct-connected electric motors, including the apparatus for lifting and tilting the tables.

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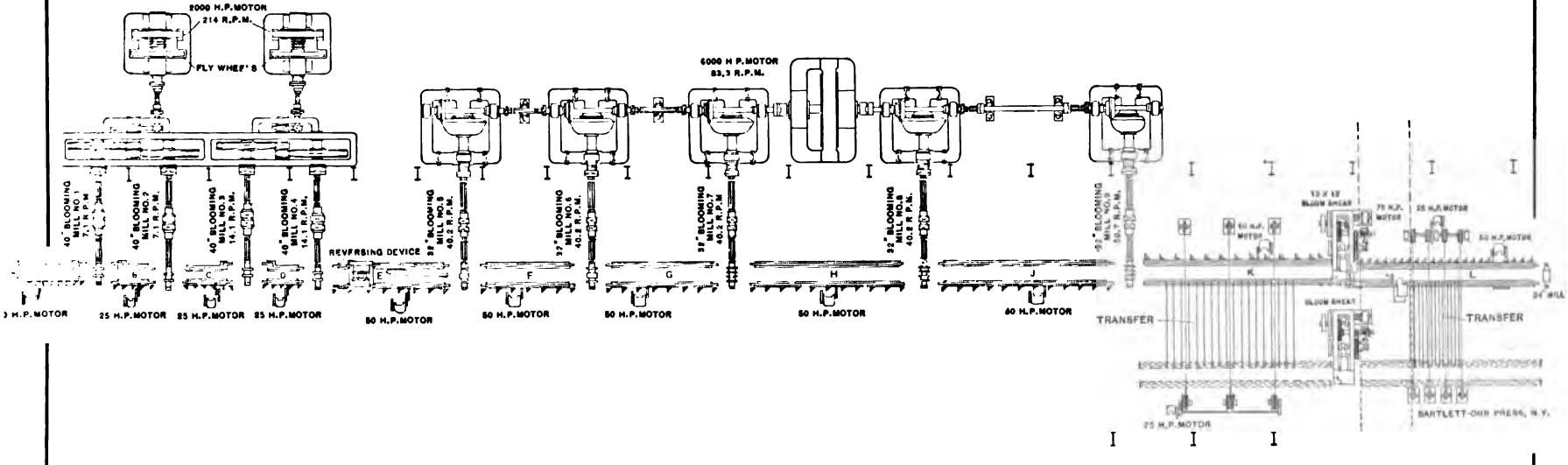
PITTSBURG, PA.



LARGEST BILLET MILL IN THE WORLD

Designed and built by us for Indiana Steel Company, Gary, Indiana. Consisting of four two-high stands of 40-inch rolls and five two-high stands of 32-inch rolls, with tables, transfers, shears, etc.

This is a continuous type of mill and is driven entirely by direct-connected electric motors.

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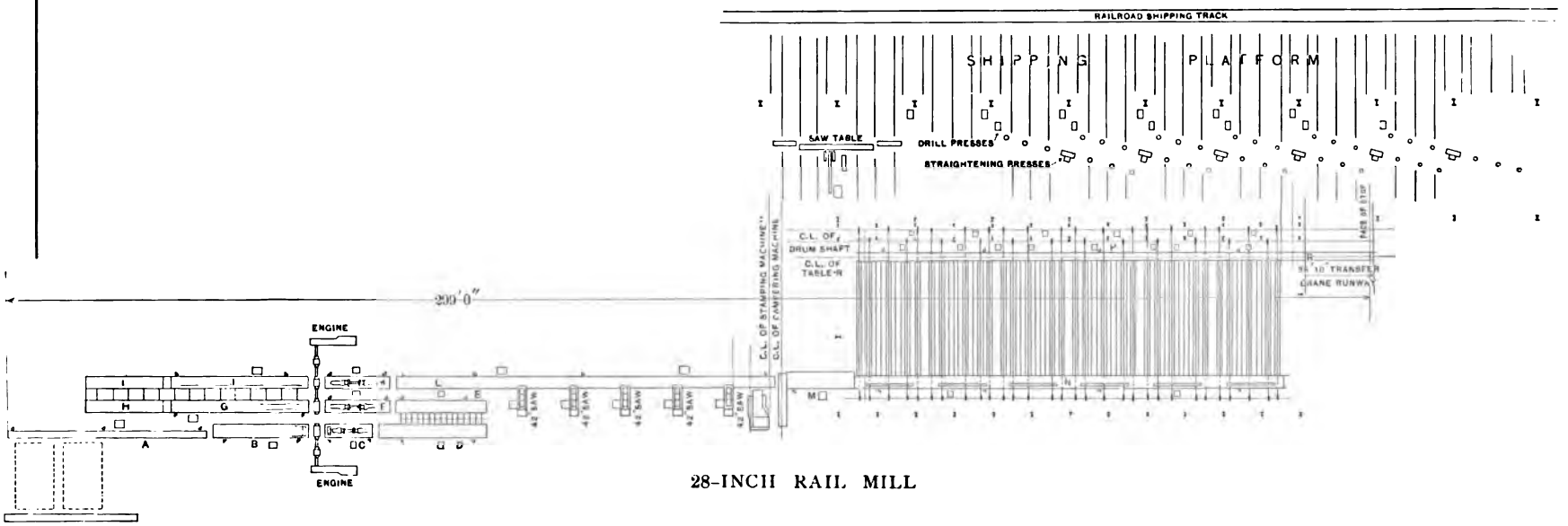
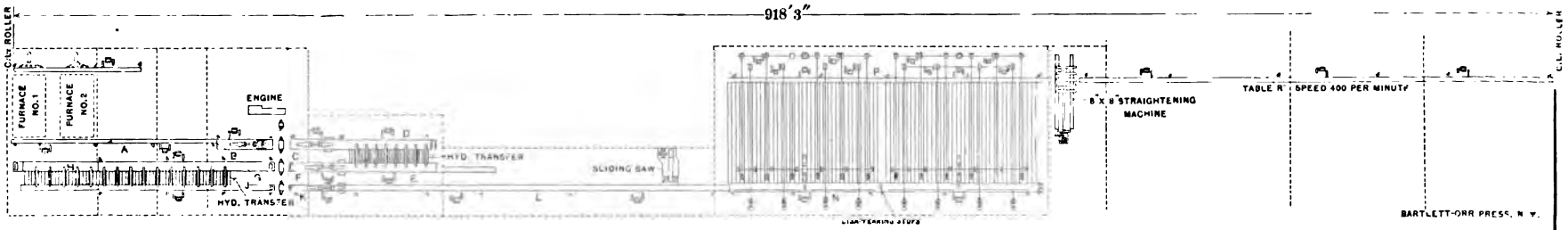
PITTSBURG, PA.



28-INCH RAIL MILL



28-INCH STRUCTURAL MILL

These mills were designed and built by us for the Bethlehem Steel Company, South Bethlehem, Pennsylvania. Each mill consists of three stands of 28-inch rolls, together with stationary and tilting tables, transfers, hot beds, saws, straightening machines, presses, etc.

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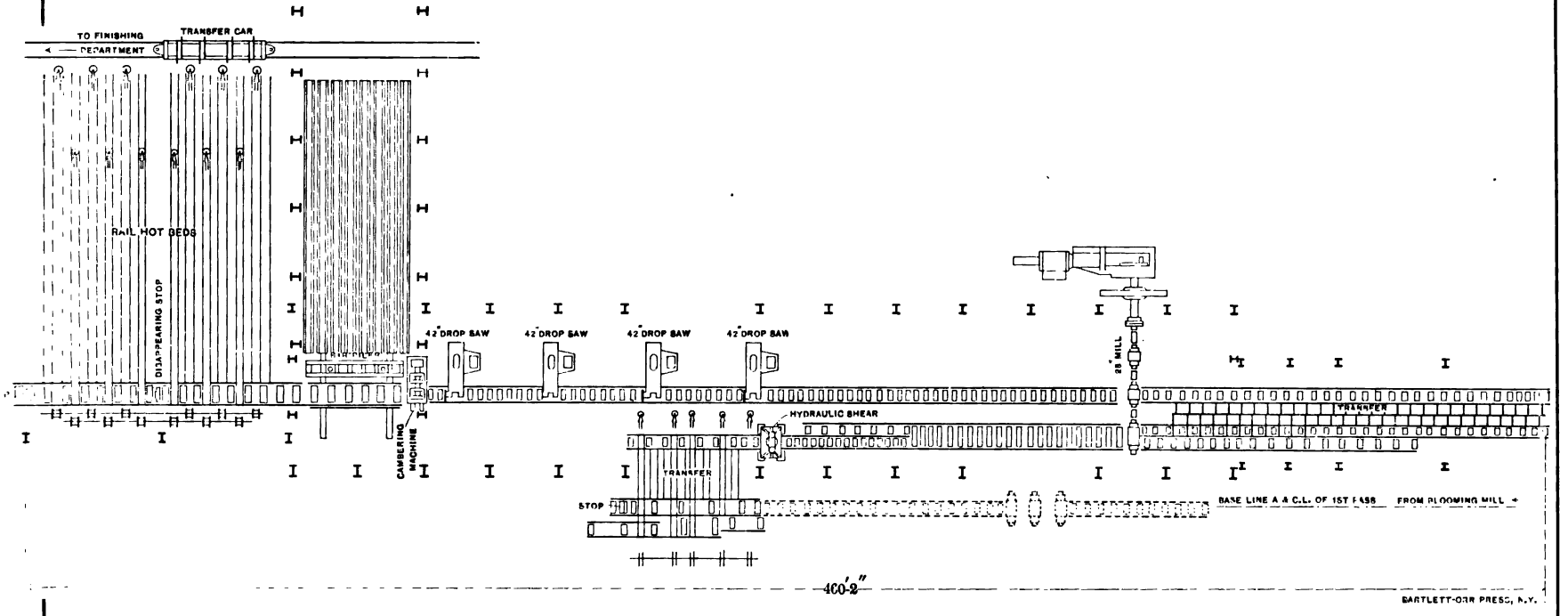
PITTSBURG, PA.



28-INCH RAIL AND SHEET BAR MILL

Designed and built by us for Republic Iron and Steel Company, Youngstown, Ohio. This mill consists of two stands of 28-inch rolls, together with tables, transfers, hot beds, shear, saws, bar piler, presses, etc.

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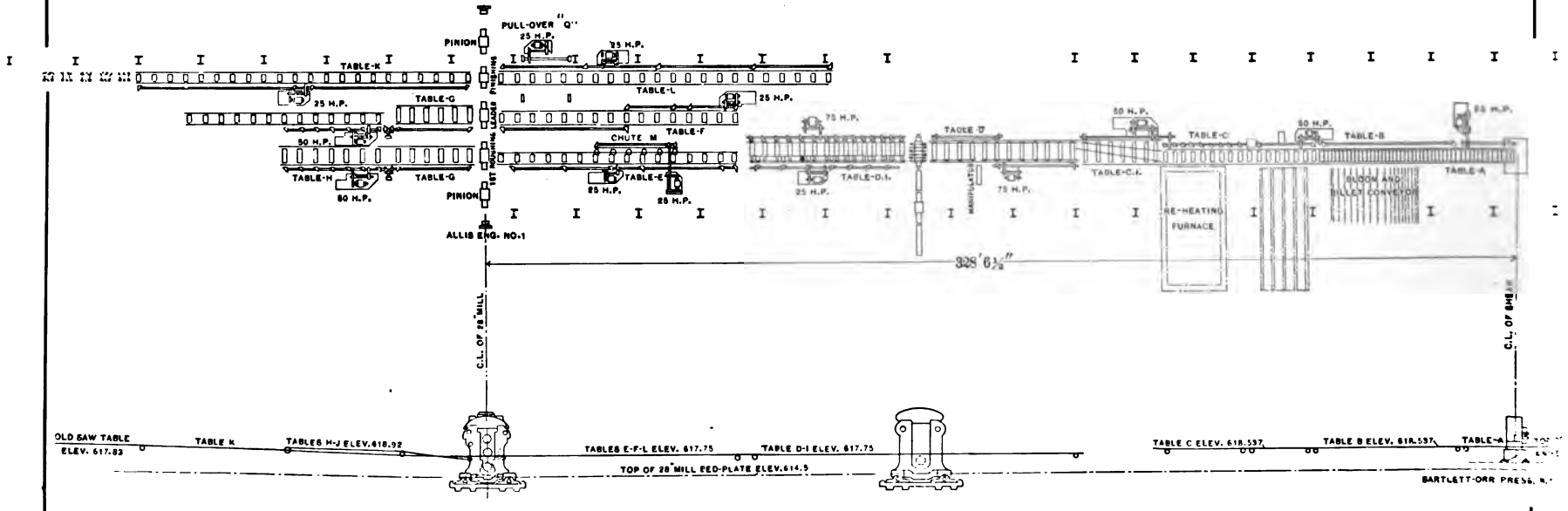

RAIL MILL

Designed and built by us for Tennessee Coal, Iron and Railroad Company, Ensley, Alabama. This mill consists of one stand of two-high 34-inch roughing rolls and three stands of 28-inch rolls, together with stationary and tilting tables, transfers, etc.

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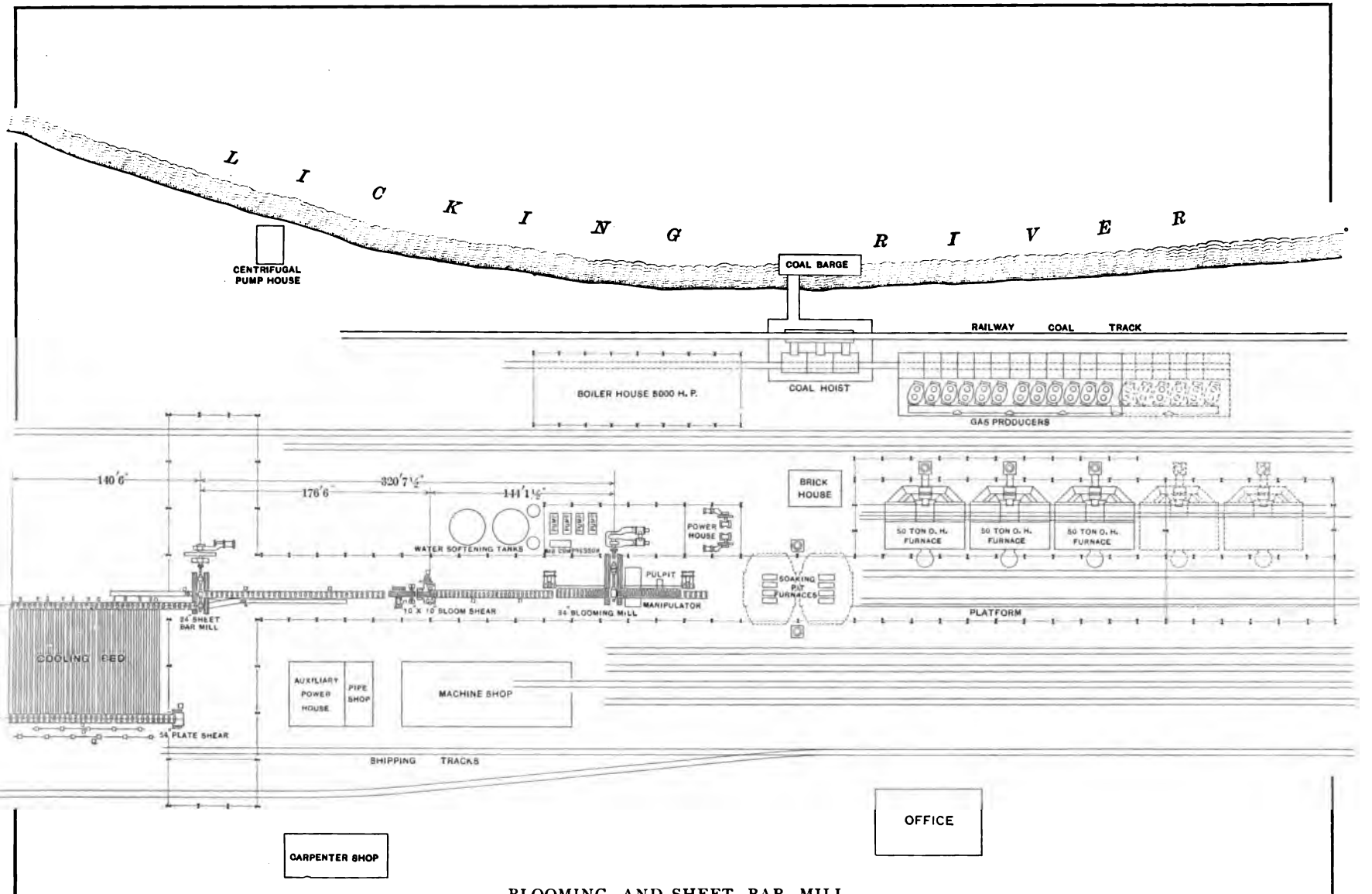


BLOOMING AND SHEET BAR MILL

Designed and built by us for the Andrews Steel Company, Newport, Kentucky. This mill consists of one stand of 34-inch blooming mill rolls and two stands of 24-inch bar mill rolls, together with tables, tranfer, cooling bed, shears, etc.

UNITED ENGINEERING & FOUNDRY COMPANY, PITTSBURG, PA.

ILLUSTRATION No. 680

UNITED ENGINEERING & FOUNDRY COMPANY PITTSBURG, PA

28-INCH RAIL MILL AND TABLES

BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

Illustration No. 681

HOT SAW RUN FOR RAIL MILL

BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 680

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

28-INCH RAIL MILL AND TABLES
BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

ILLUSTRATION NO. 681

HOT SAW RUN FOR RAIL MILL

BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 682

TILTING FRAME HOT SAWS FOR RAIL MILL

BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

ILLUSTRATION No. 683

RAIL CAMBERING MACHINE

BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

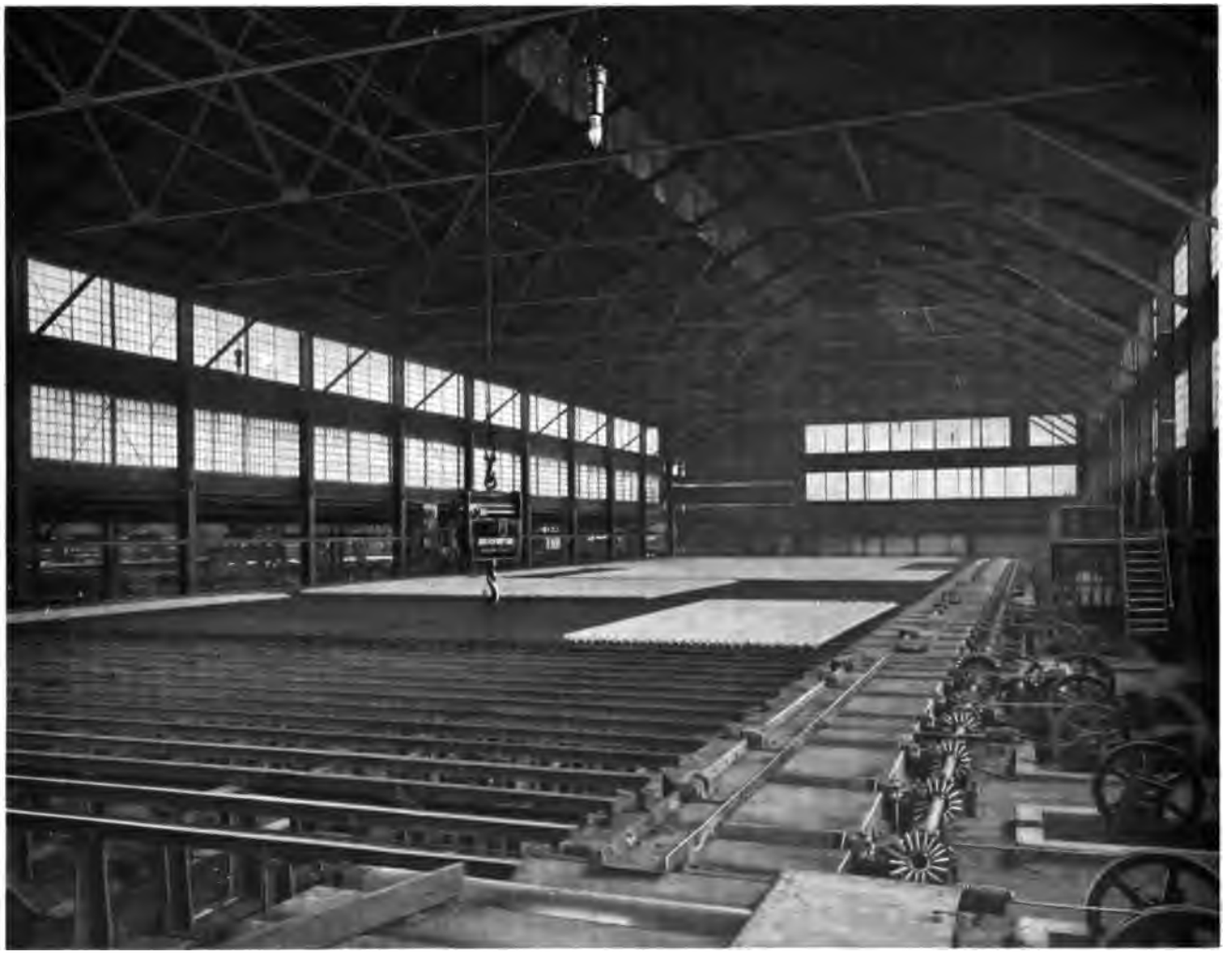


ILLUSTRATION No. 684

HOT BEDS FOR RAIL MILL

BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 685

FINISHING DEPARTMENT FOR RAIL MILL

BETHLEHEM STEEL COMPANY, SOUTH BETHLEHEM, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 554

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

40-INCH BLOOMING MILL — DESIGNED BY JULIAN KENNEDY
YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

ILLUSTRATION NO. 555

TRANSFER AND TABLES FOR 40-INCH BLOOMING MILL
YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 647

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

40-INCH BLOOMING MILL AND TABLES
ILLINOIS STEEL COMPANY, SOUTH CHICAGO, ILLINOIS

ILLUSTRATION No. 645

30-INCH UNIVERSAL PLATE MILL

ILLINOIS STEEL COMPANY, SOUTH CHICAGO, ILLINOIS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 157

38-INCH BLOOMING MILL AND TABLES
SHARON WORKS, CARNEGIE STEEL COMPANY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

ILLUSTRATION No. 157 A

38-INCH BLOOMING MILL AND TABLES
SHARON WORKS, CARNEGIE STEEL COMPANY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 416 C

36-INCH BLOOMING MILL

Equipped with hydraulic counter balance cylinder. Top roll up

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

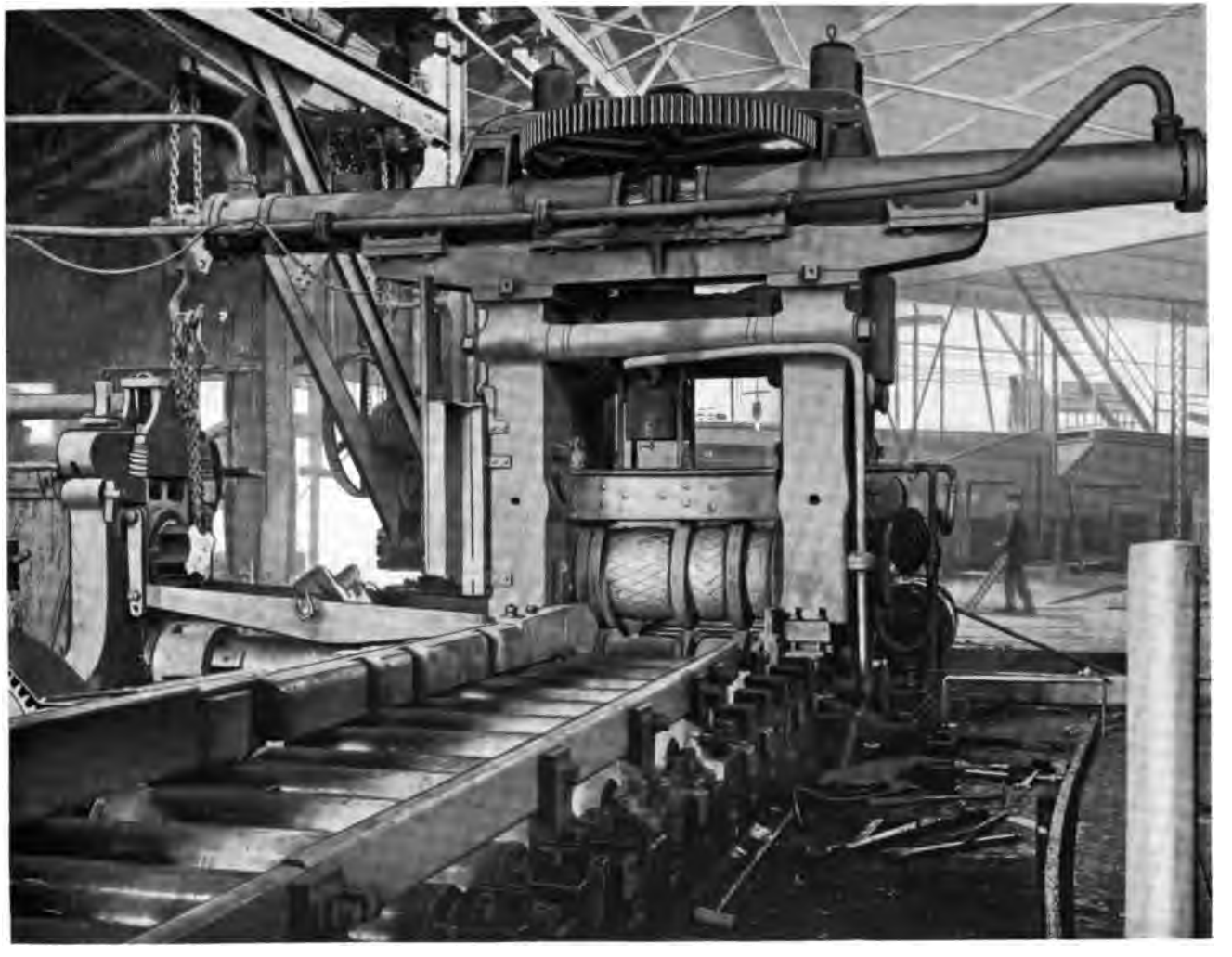


ILLUSTRATION No. 416 B

36–INCH BLOOMING MILL

Equipped with hydraulic counter balance cylinder. Top roll down

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 564

36-INCH BLOOMING MILL AND TABLES

NEW YORK STATE STEEL COMPANY, BUFFALO, NEW YORK

ILLUSTRATION No. 544

INTERIOR OF BLOOMING MILL BUILDING
AMERICAN TUBE AND STAMPING COMPANY, BRIDGEPORT, CONNECTICUT

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

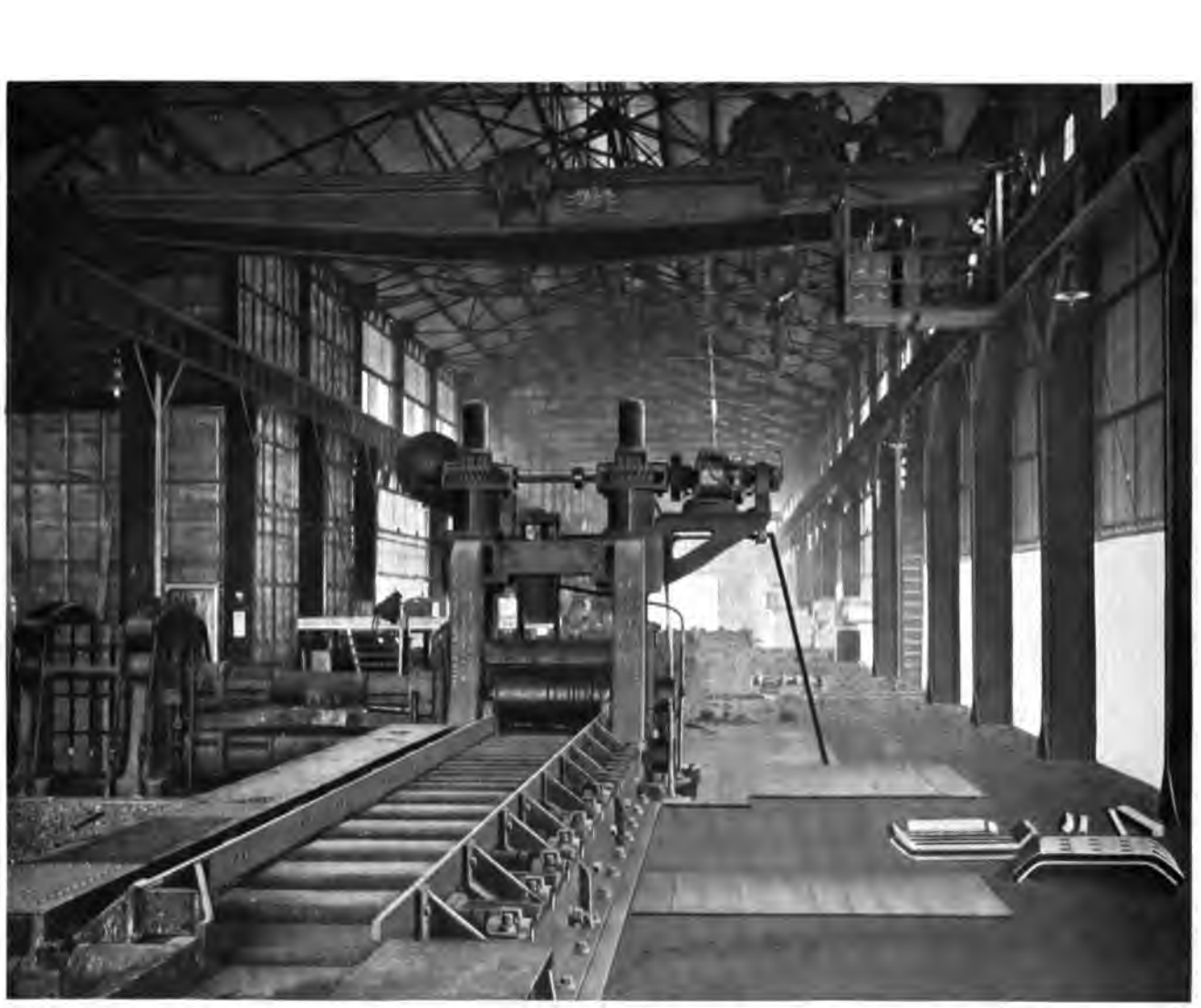


ILLUSTRATION NO. 784

34-INCH BLOOMING MILL AND TABLES
ANDREWS STEEL COMPANY, NEWPORT, KENTUCKY

ILLUSTRATION NO. 791

BLOOM SHEAR AND TABLES

ANDREWS STEEL COMPANY, NEWPORT, KENTUCKY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 788

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

24-INCH SHEET BAR MILL
ANDREWS STEEL COMPANY, NEWPORT, KENTUCKY

ILLUSTRATION NO. 789

24-INCH SHEET BAR MILL

ANDREWS STEEL COMPANY, NEWPORT, KENTUCKY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 524

84–INCH PLATE MILL

LA BELLE IRON WORKS, STEUBENVILLE, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 838

PLATE MILLS AND TABLES

LA BELLE IRON WORKS, STEUBENVILLE, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 660

26-INCH BLOOMING MILL AND TABLES

JOHN A. ROEBLING'S SONS COMPANY, TRENTON, NEW JERSEY

ILLUSTRATION No. 659

26-INCH BLOOMING MILL AND TABLES

JOHN A. ROEBLING'S SONS COMPANY, TRENTON, NEW JERSEY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 563

28-INCH MERCHANT MILL

DUQUESNE WORKS, CARNEGIE STEEL COMPANY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

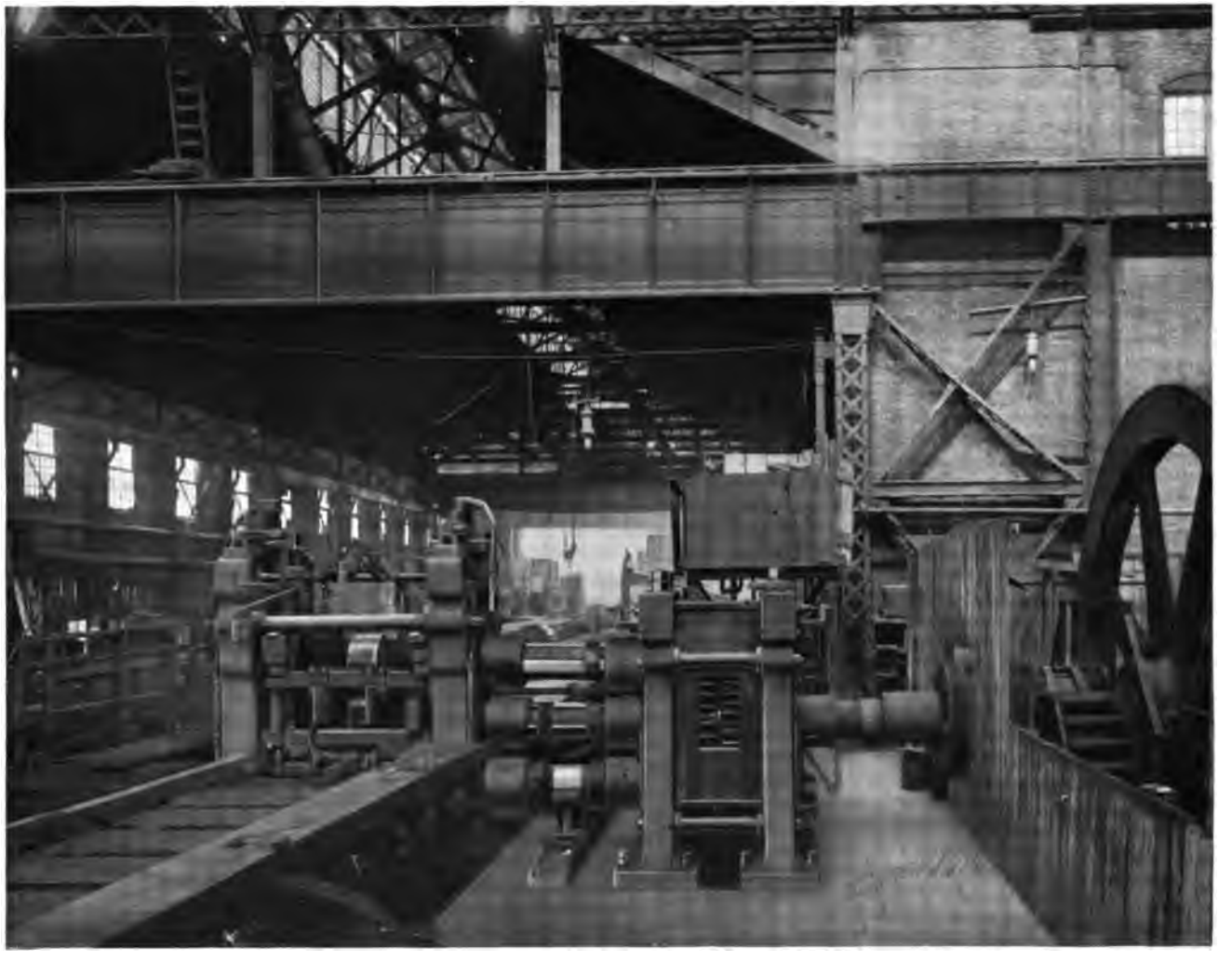


ILLUSTRATION No. 517

24–INCH STRUCTURAL MILL

LACKAWANNA STEEL COMPANY, BUFFALO, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

ILLUSTRATION No. 296

SHEET MILLS

APOLLO WORKS, AMERICAN SHEET AND TIN PLATE COMPANY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

ILLUSTRATION No. 298

PENNSYLVANIA WORKS, AMERICAN SHEET AND TIN PLATE COMPANY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 548

26-INCH SHEET MILL

AMERICAN TUBE AND STAMPING COMPANY, BRIDGEPORT, CONNECTICUT

ILLUSTRATION No. 649

23-INCH RAIL MILL—MOTOR DRIVEN
ILLINOIS STEEL COMPANY, SOUTH CHICAGO, ILLINOIS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 556

TWO 18-INCH MORGAN CONTINUOUS MILLS
YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

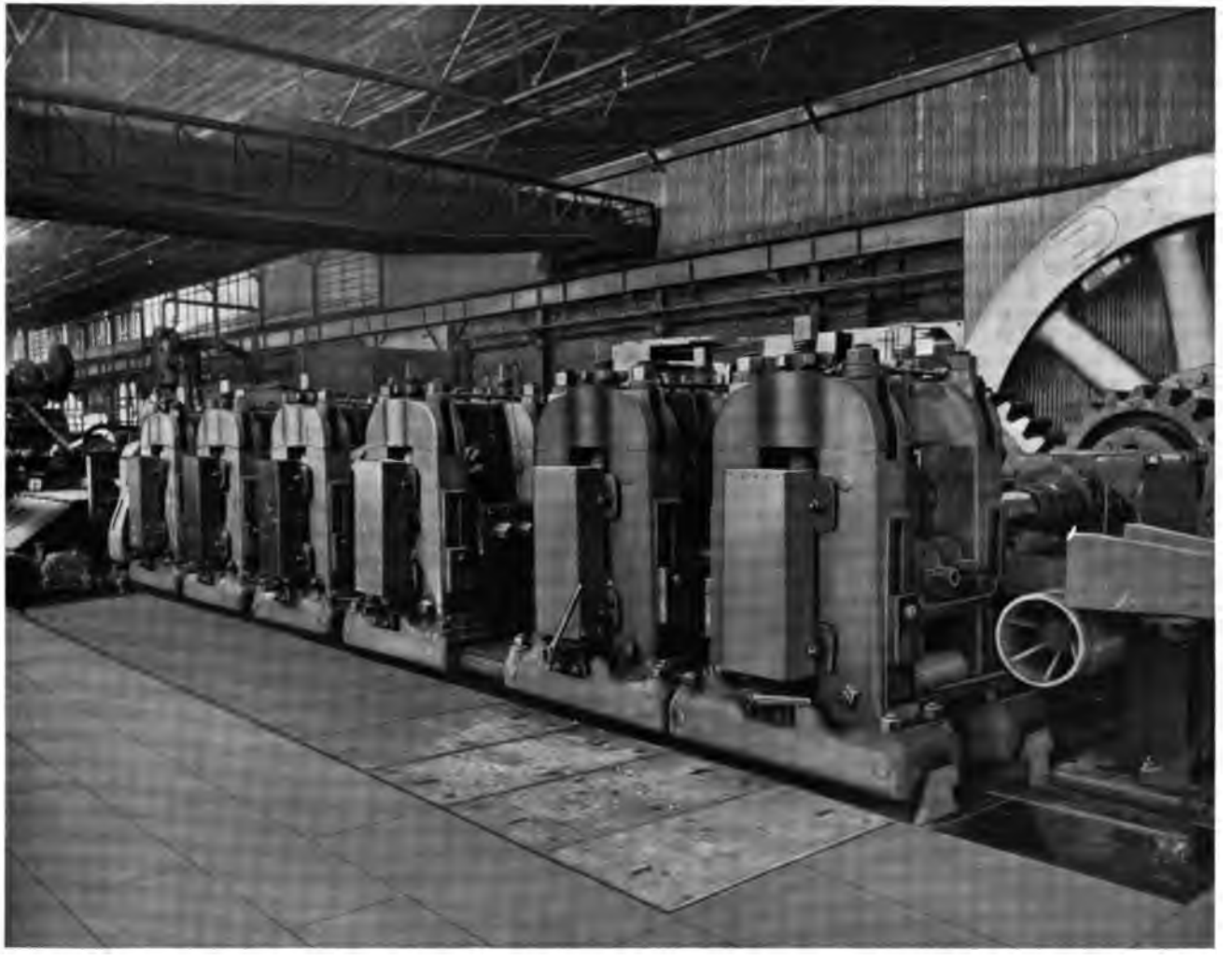


ILLUSTRATION No. 679

16-INCH MORGAN CONTINUOUS MILL

DOMINION IRON AND STEEL COMPANY, SYDNEY, CAPE BRETON, NOVA SCOTIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 657

16-INCH MERCHANT MILL

ILLINOIS STEEL COMPANY, MILWAUKEE, WISCONSIN

ILLUSTRATION No. 650

9-INCH MERCHANT MILL

ILLINOIS STEEL COMPANY, MILWAUKEE, WISCONSIN

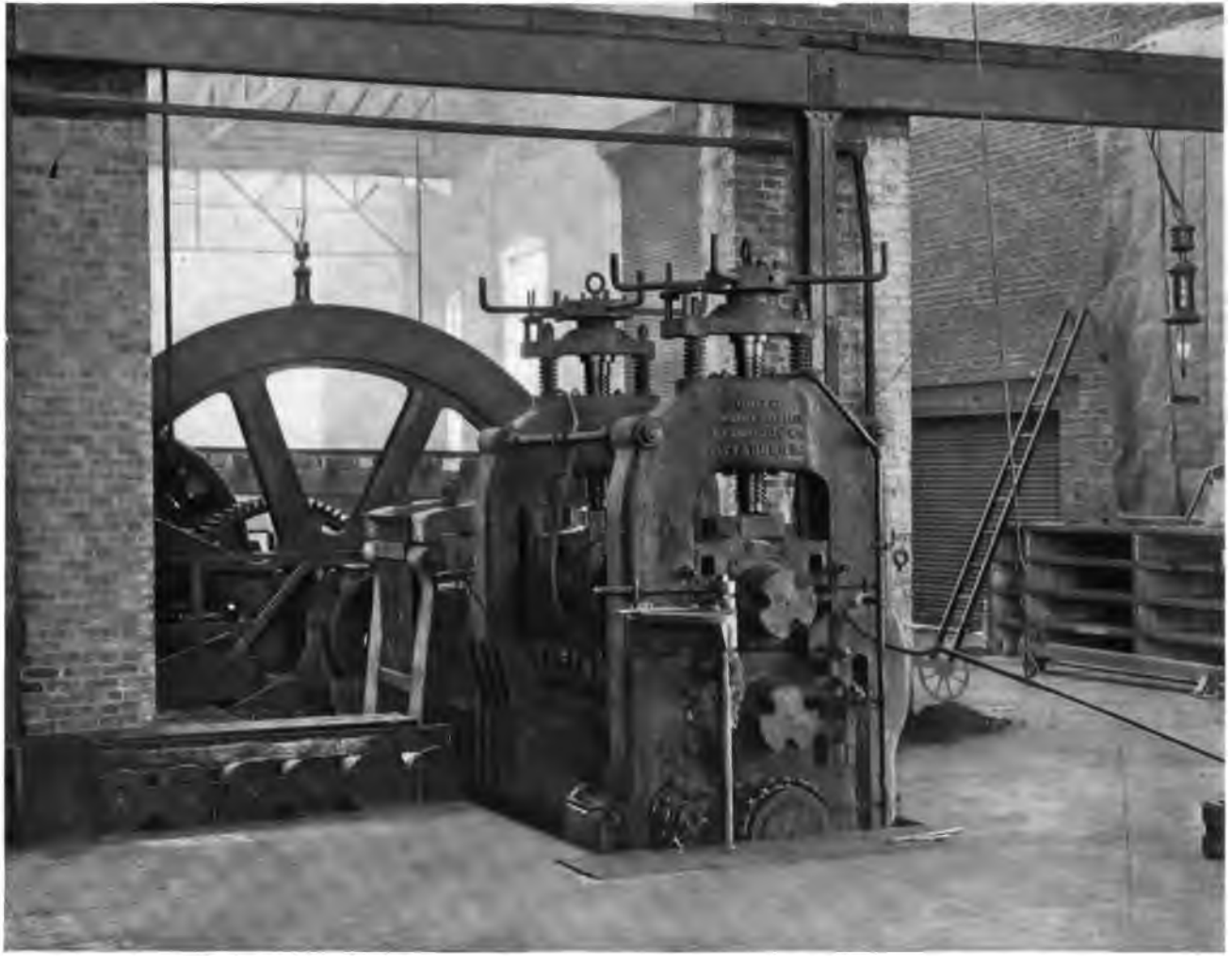


ILLUSTRATION NO. 540

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

20-INCH MERCHANT MILL—MOTOR DRIVEN
SINGER MANUFACTURING COMPANY, ELIZABETHPORT, NEW JERSEY

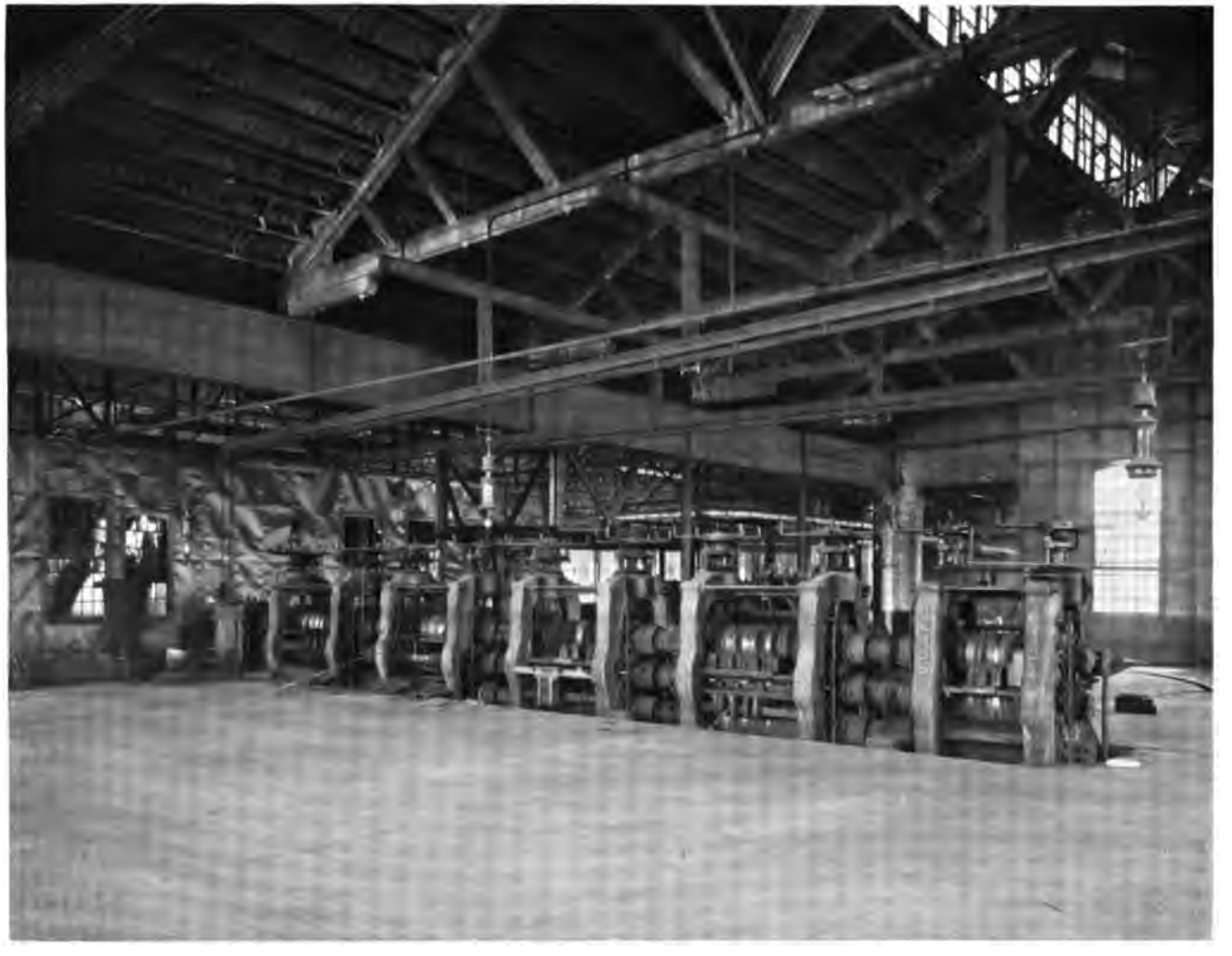


ILLUSTRATION NO. 539

20-INCH MERCHANT MILL—MOTOR DRIVEN

SINGER MANUFACTURING COMPANY, ELIZABETHPORT, NEW JERSEY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

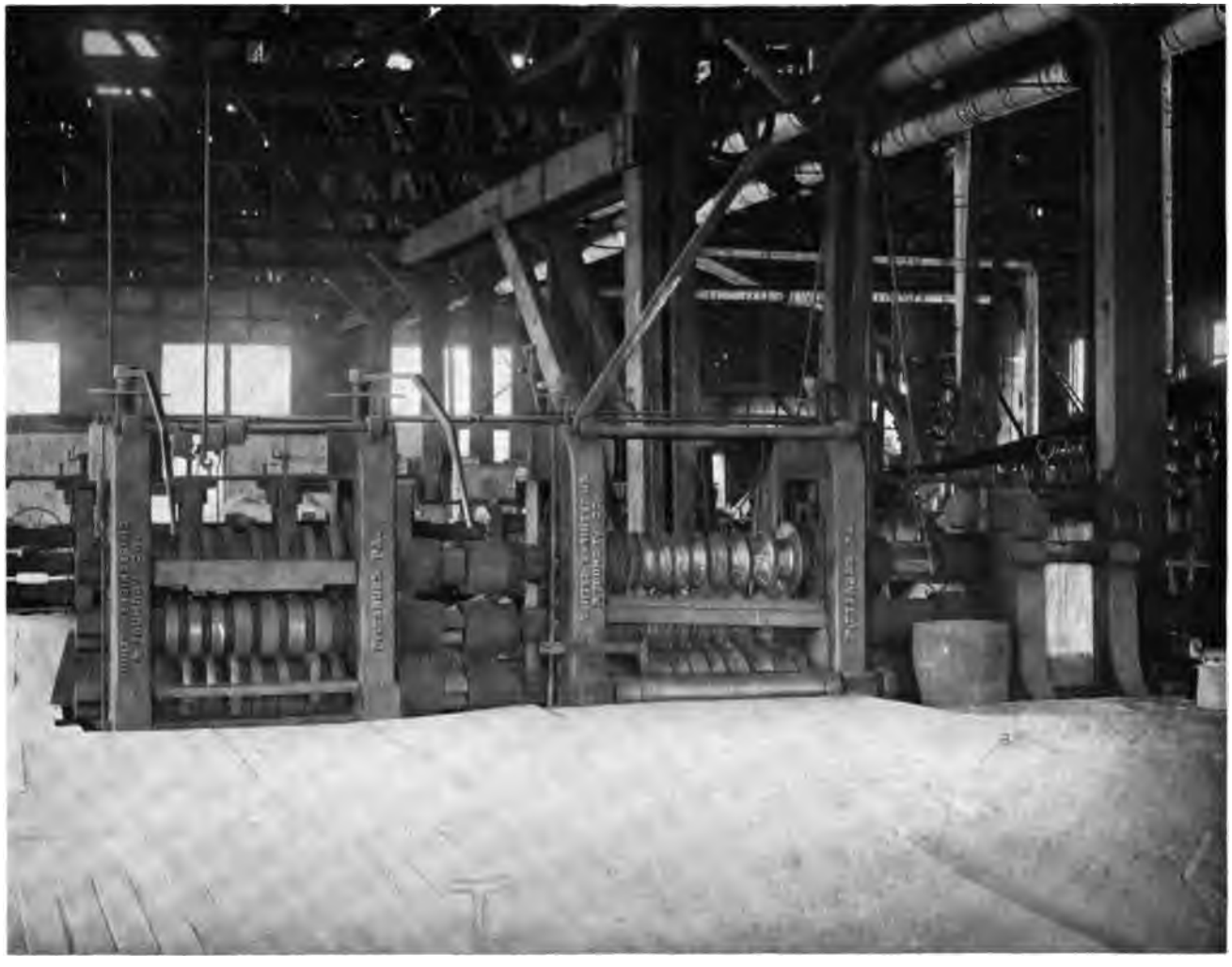


ILLUSTRATION No. 654

16–INCH MERCHANT MILL
SCRANTON, PENNSYLVANIA

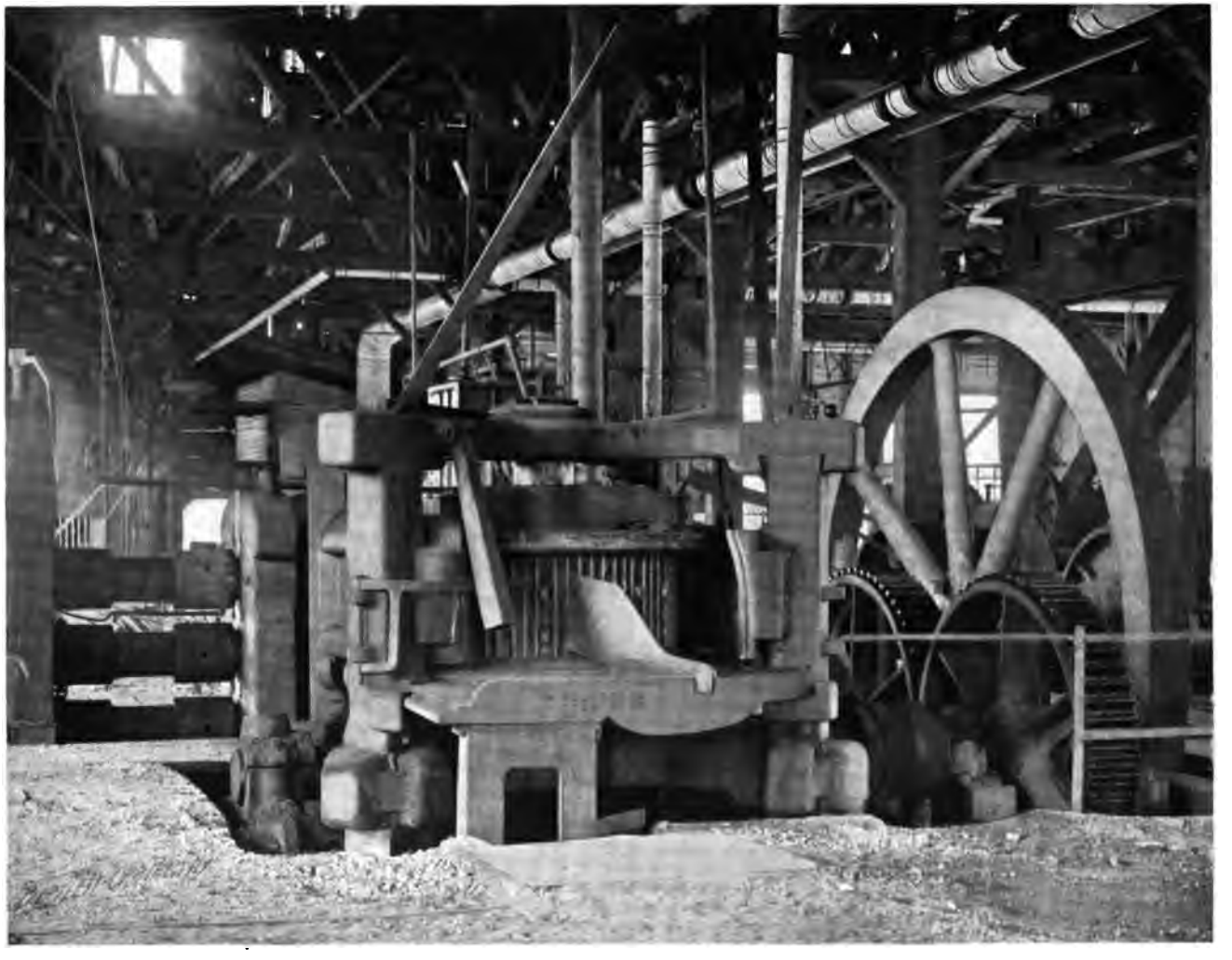


ILLUSTRATION NO. 653

B-1 SQUEEZER AND GEARING
SCRANTON, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 655

12-INCH MERCHANT MILL
SCRANTON, PENNSYLVANIA

ILLUSTRATION No. 623

12-INCH MERCHANT MILL—SHOWING HOT BED AND SAW
SCRANTON, PENNSYLVANIA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

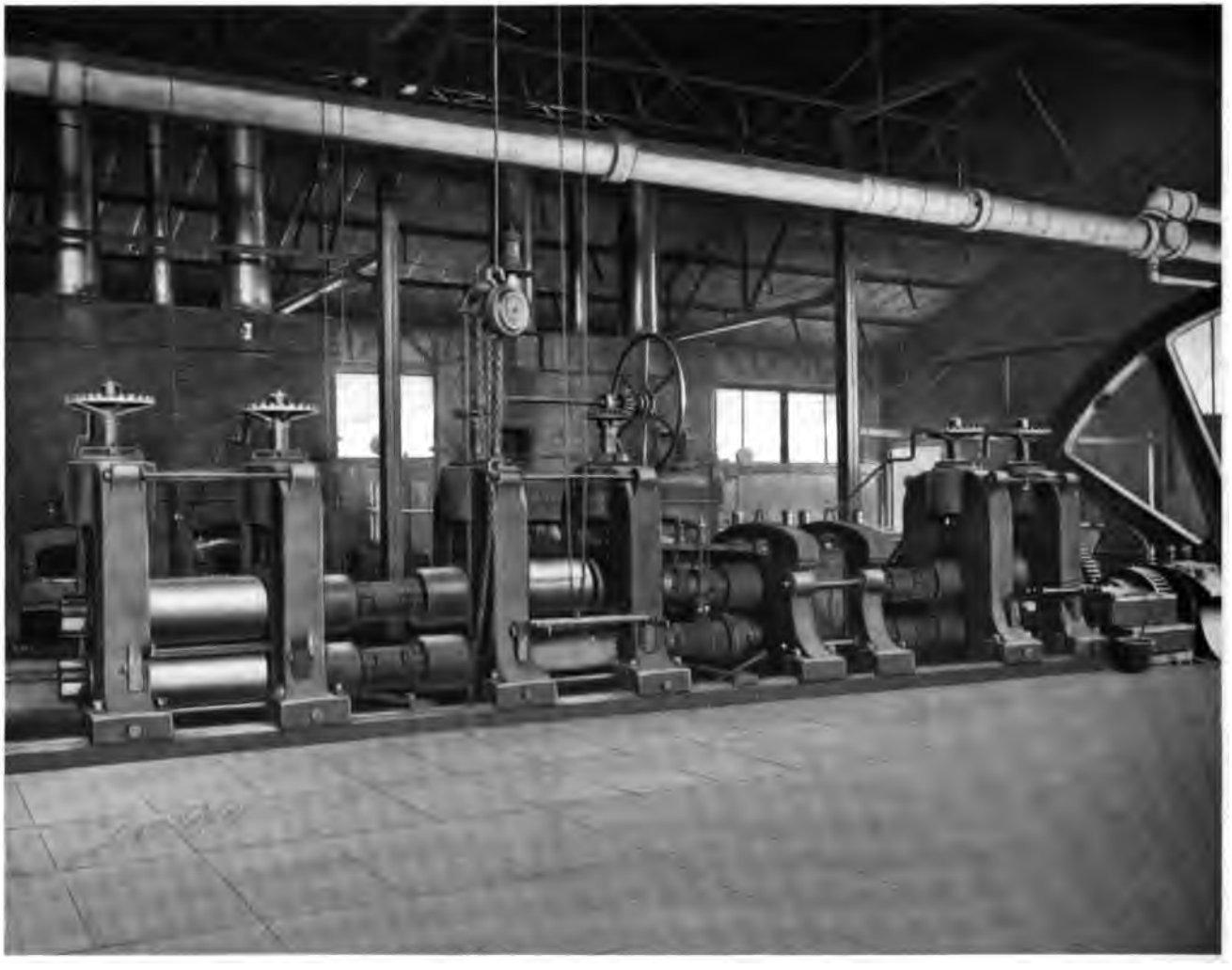


ILLUSTRATION No. 518

18-INCH PLATE MILL

HALCOMB STEEL COMPANY, SYRACUSE, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 521

14-INCH MERCHANT MILL

HALCOMB STEEL COMPANY, SYRACUSE, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

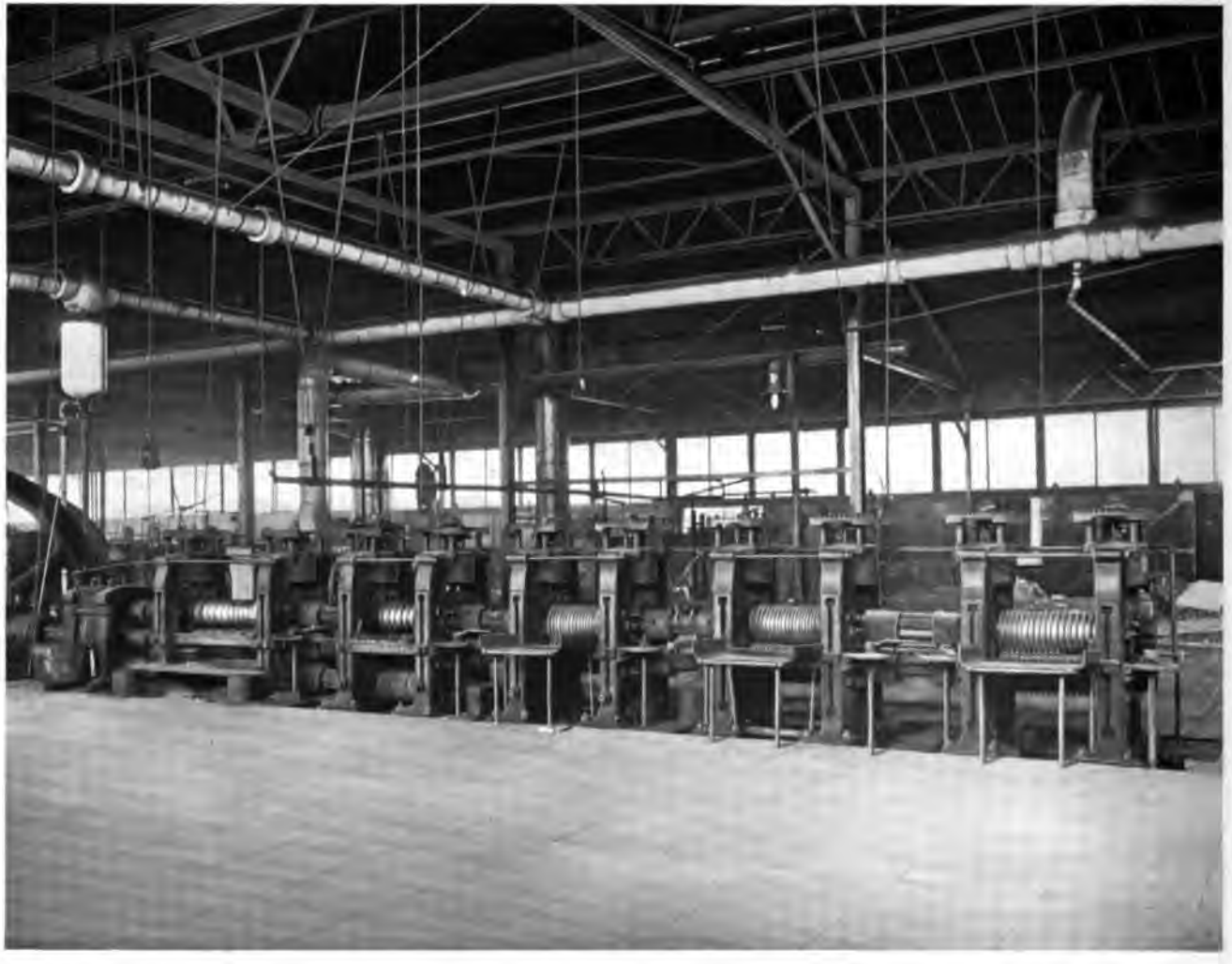


ILLUSTRATION No. 520

12–INCH MERCHANT MILL

HALCOMB STEEL COMPANY, SYRACUSE, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 519

9–INCH MERCHANT MILL—BELGIAN TYPE

HALCOMB STEEL COMPANY, SYRACUSE, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 550

THREE-CYLINDER HYDRAULIC BLOOM SHEAR—WITH GAUGE

STATEN ISLAND, NEW YORK

ILLUSTRATION No. 557

HOT BILLET AND SLAB SHEAR

YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY, PITTSBURG, PA.

ILLUSTRATION NO. 529

110-INCH PLATE SHEAR

LA BELLE IRON WORKS, STEUBENVILLE, OHIO

ILLUSTRATION No. 528

100-INCH PLATE STRAIGHTENING MACHINE AND 84-INCH PLATE MILL
LA BELLE IRON WORKS, STEUBENVILLE, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 551

TRANSFER BED AND TABLES
STATEN ISLAND, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 558

KENNEDY BAR PILER — WITH PINCH ROLLS

YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

ILLUSTRATION No. 533

INTERIOR ROLL TURNING SHOP
LACKAWANNA STEEL COMPANY, BUFFALO, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 530

INGOT BUGGY

LACKAWANNA STEEL COMPANY, BUFFALO, NEW YORK

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 523

SKELP CHARGING MACHINE

LA BELLE IRON WORKS, STEUBENVILLE, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 559

HOT SCARFING ROLLS AND BENDING DIES

YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 522

CROSS ROLLS AND COOLING RACK
LA BELLE IRON WORKS, STEUBENVILLE, OHIO

ILLUSTRATION No. 560

COOLING RACK

YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

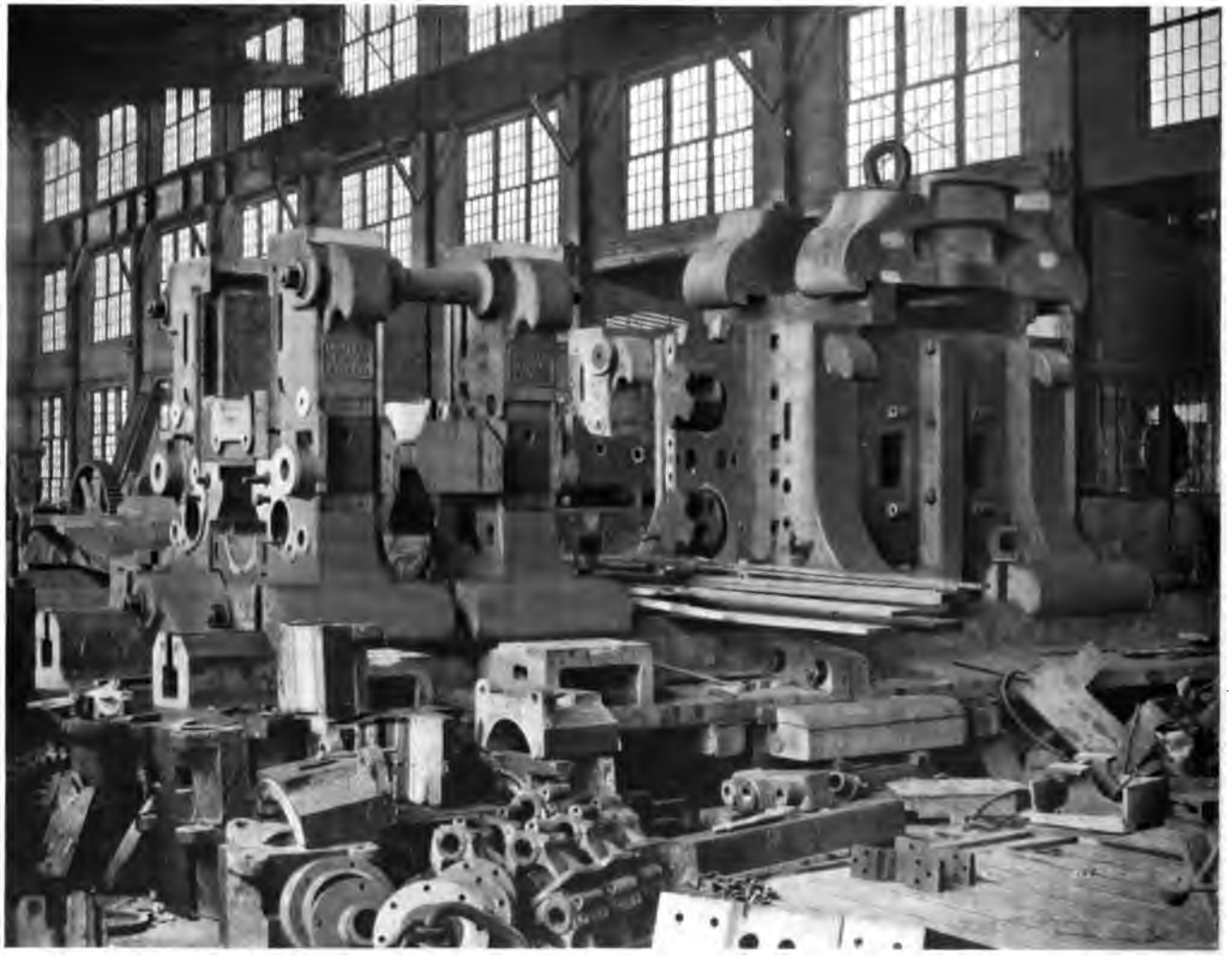


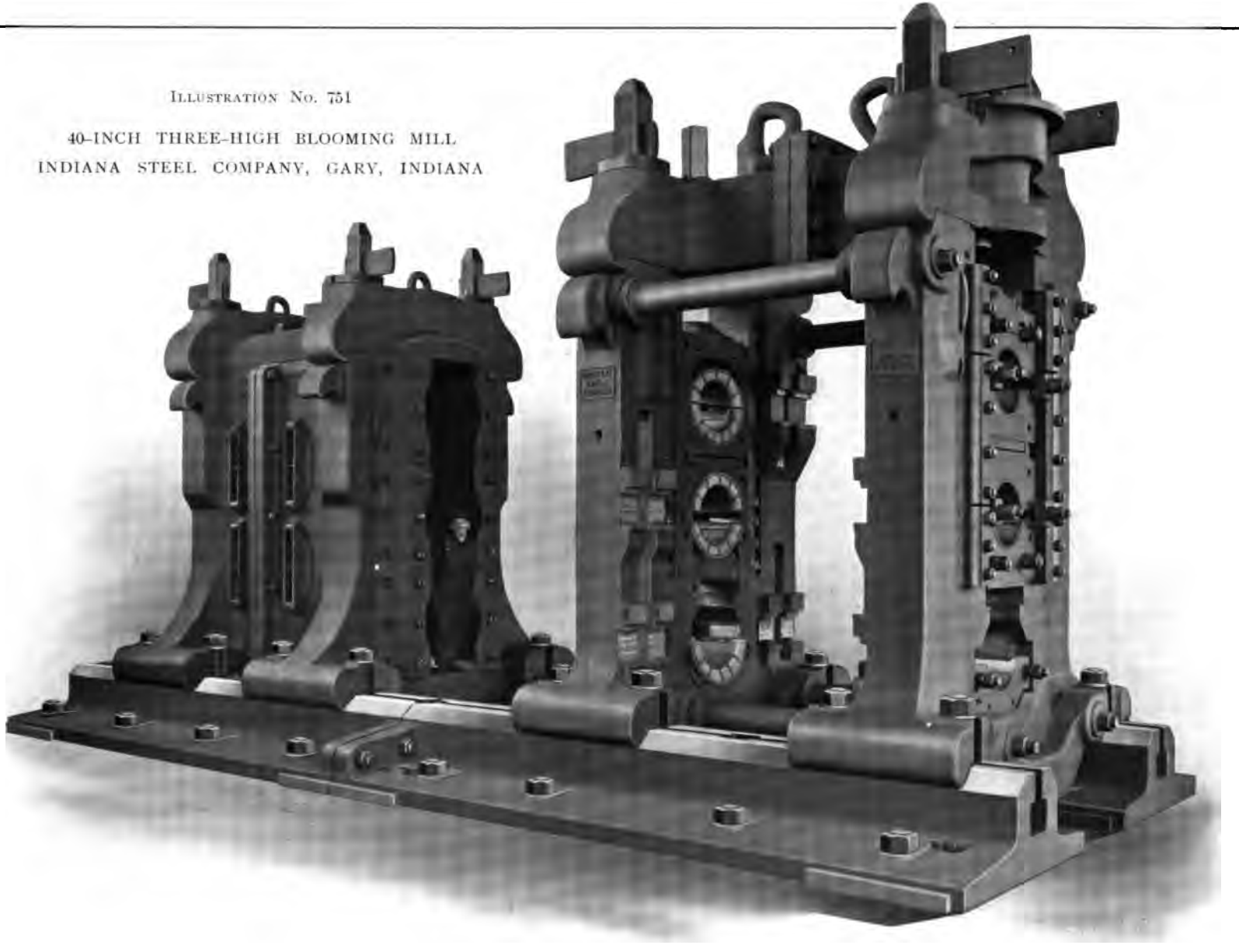
ILLUSTRATION No. 608

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

40-INCH BLOOMING MILL FOR INDIANA STEEL COMPANY
BEING ASSEMBLED AT OUR WORKS

ILLUSTRATION No. 751

40-INCH THREE-HIGH BLOOMING MILL
INDIANA STEEL COMPANY, GARY, INDIANA



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

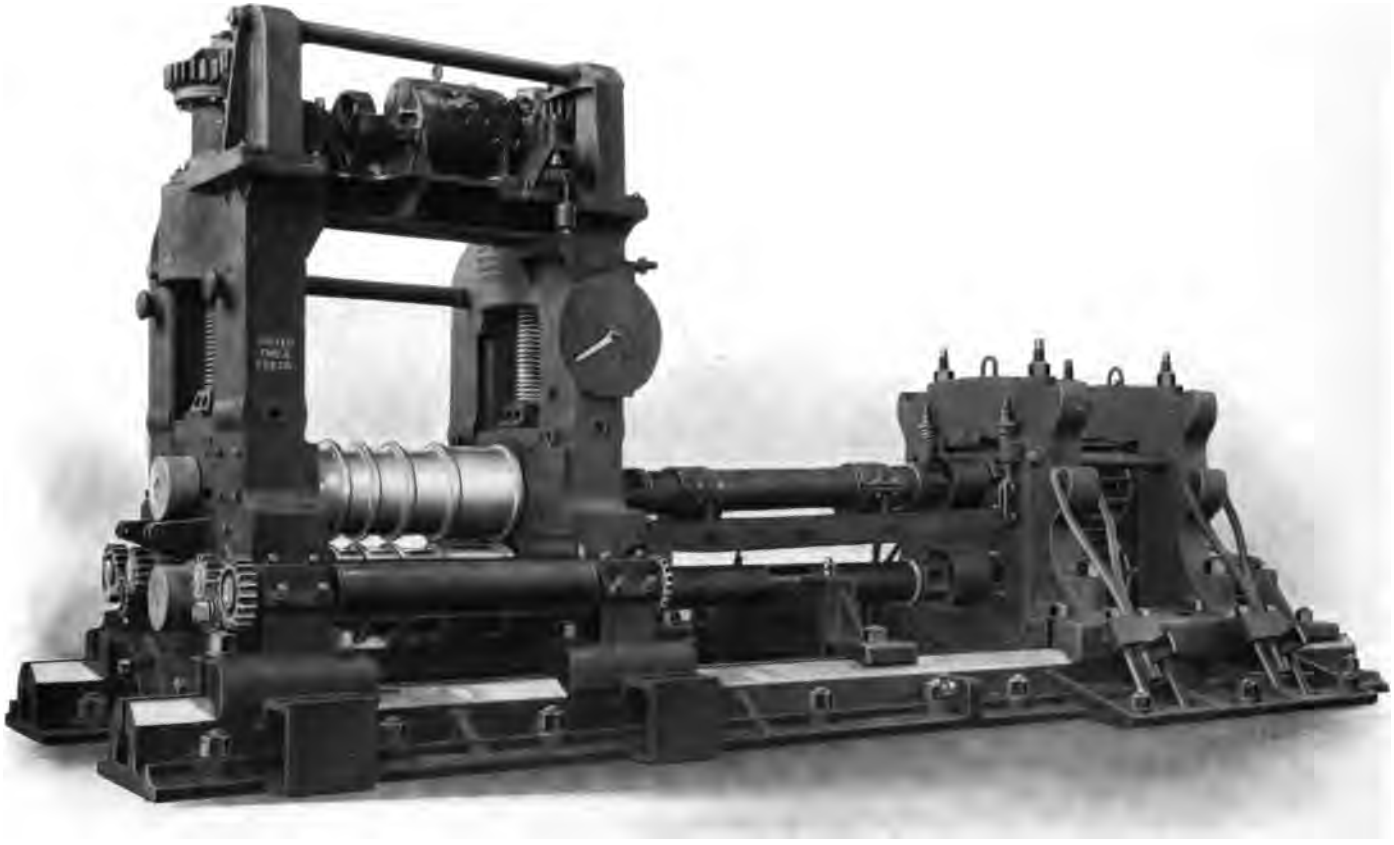


ILLUSTRATION No. 341

40-INCH BLOOMING MILL

Equipped with electric screw-down

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

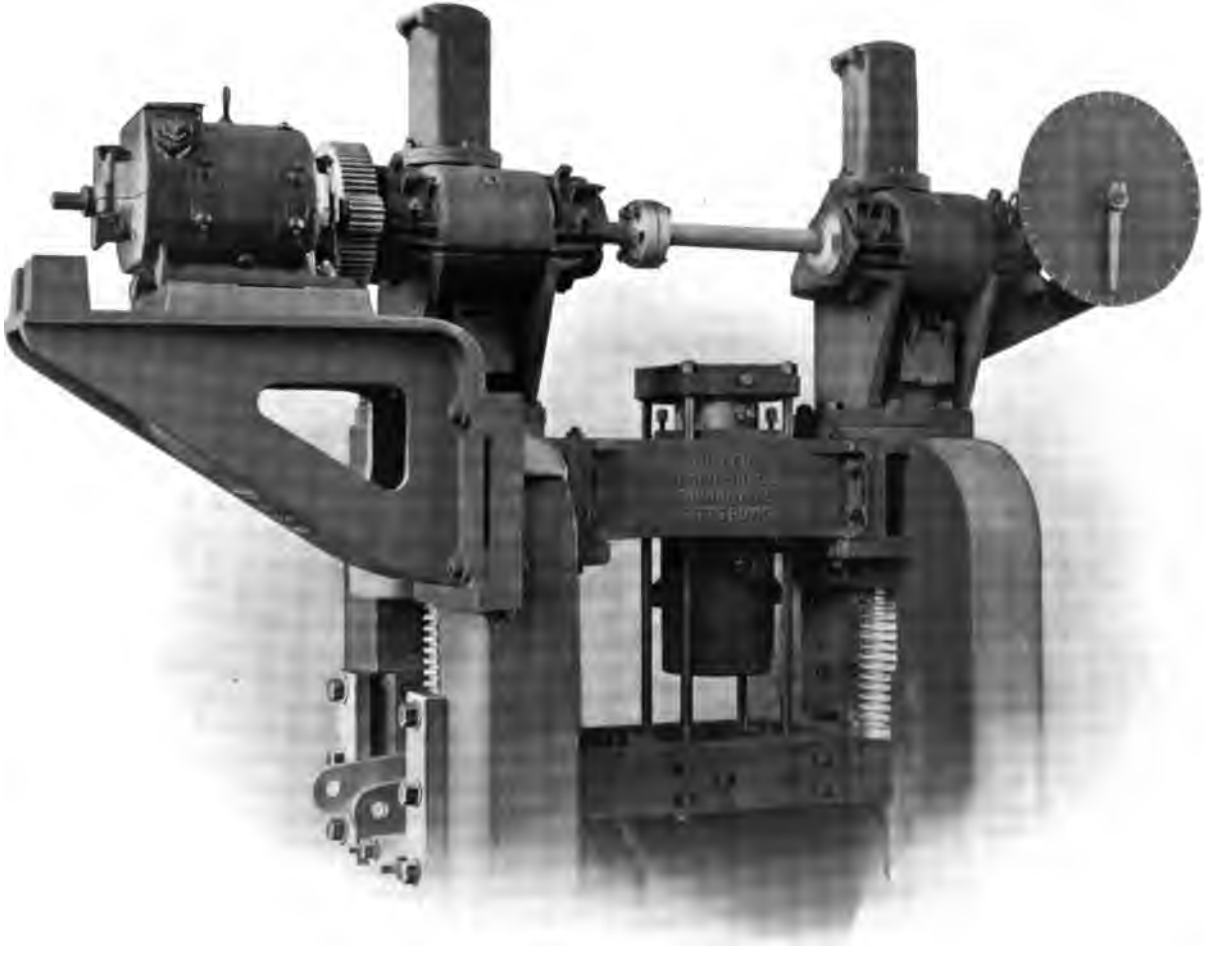


ILLUSTRATION No. 505

ELECTRIC SCREW-DOWN FOR BLOOMING MILL

With motor outside of housings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

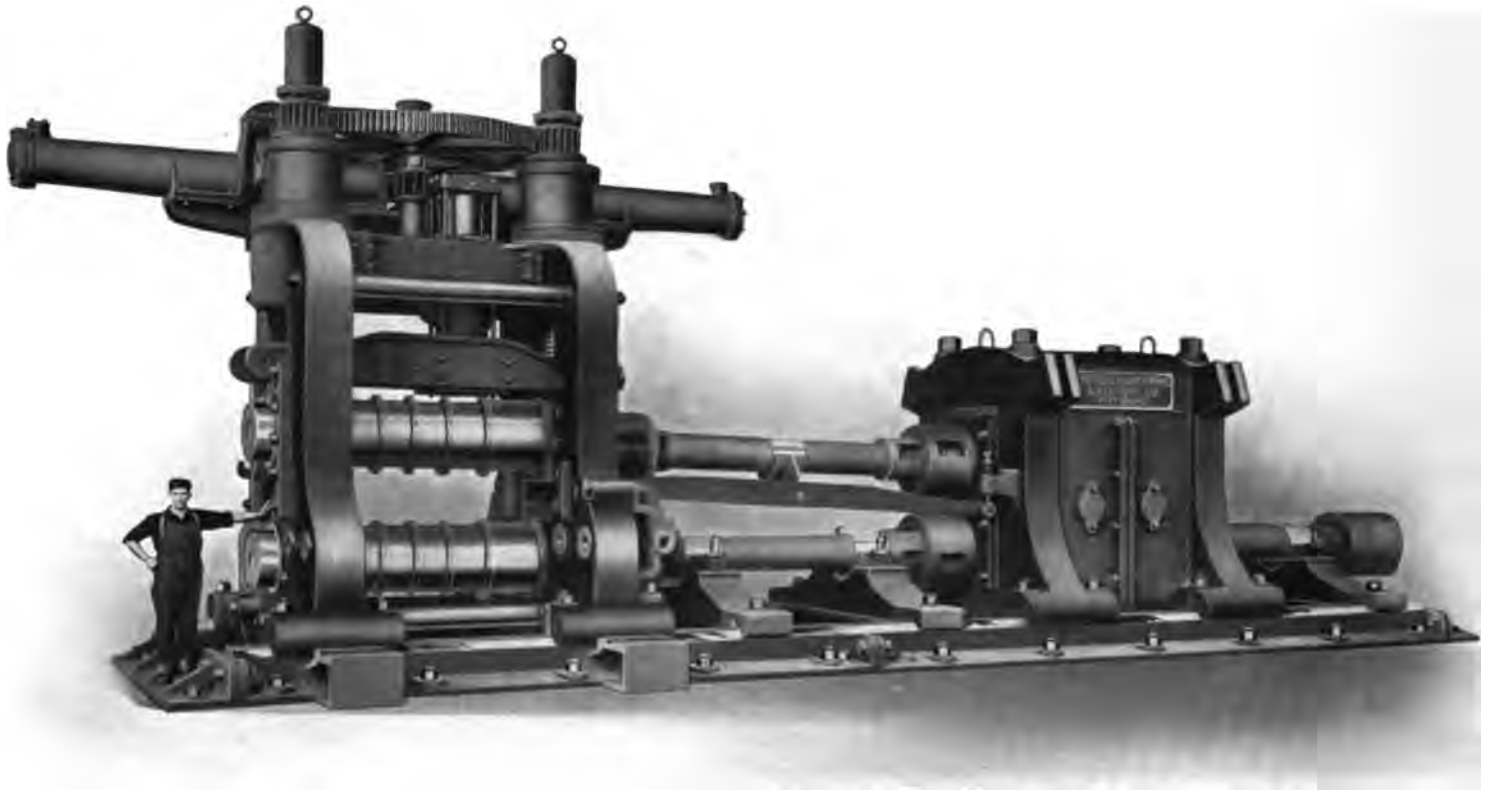


ILLUSTRATION No. 476

36-INCH BLOOMING MILL

Equipped with hydraulic screw-down and enclosed type of pinion housings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

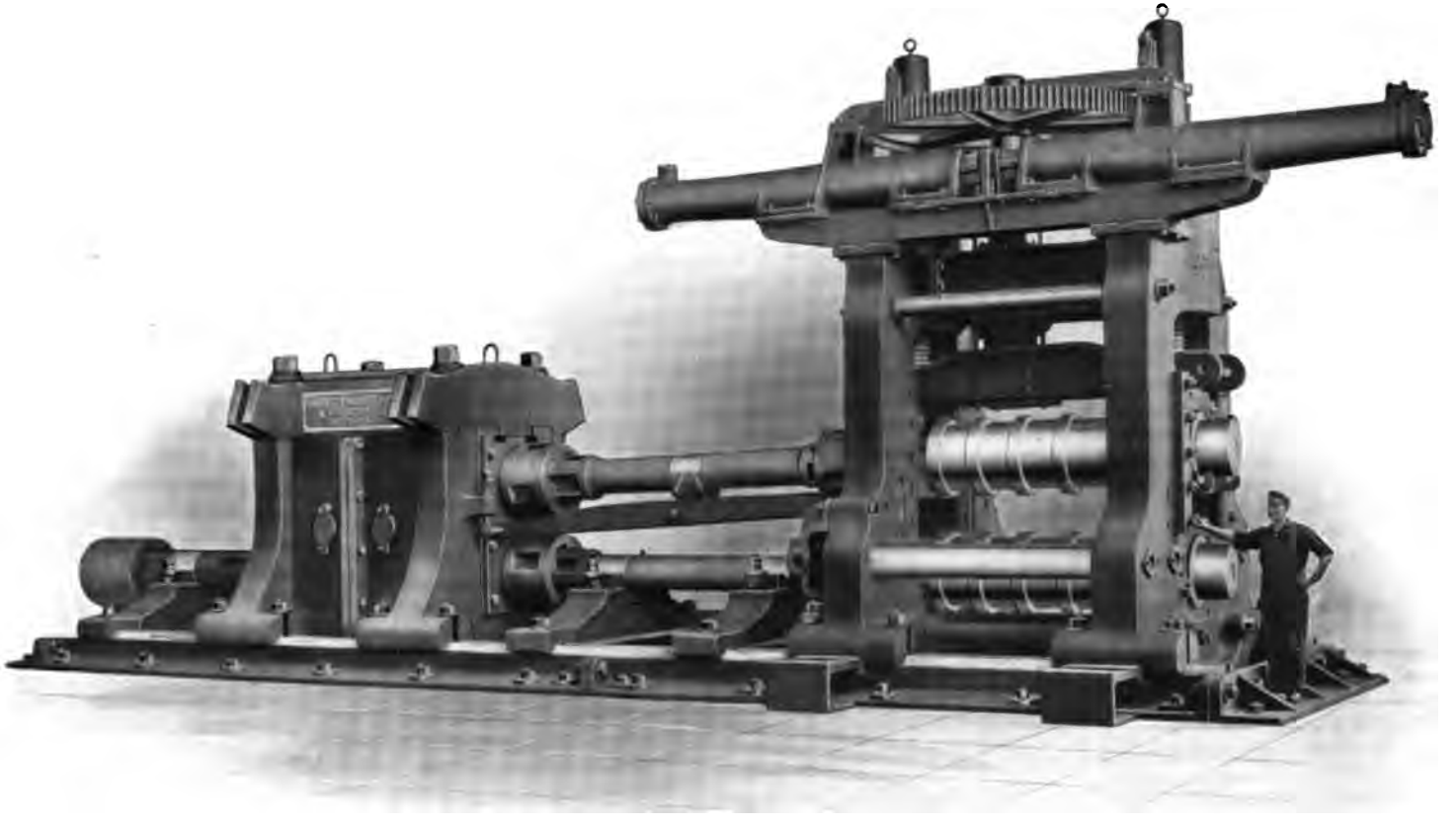


ILLUSTRATION NO. 477

36-INCH BLOOMING MILL

Equipped with hydraulic screw-down and enclosed type of pinion housings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

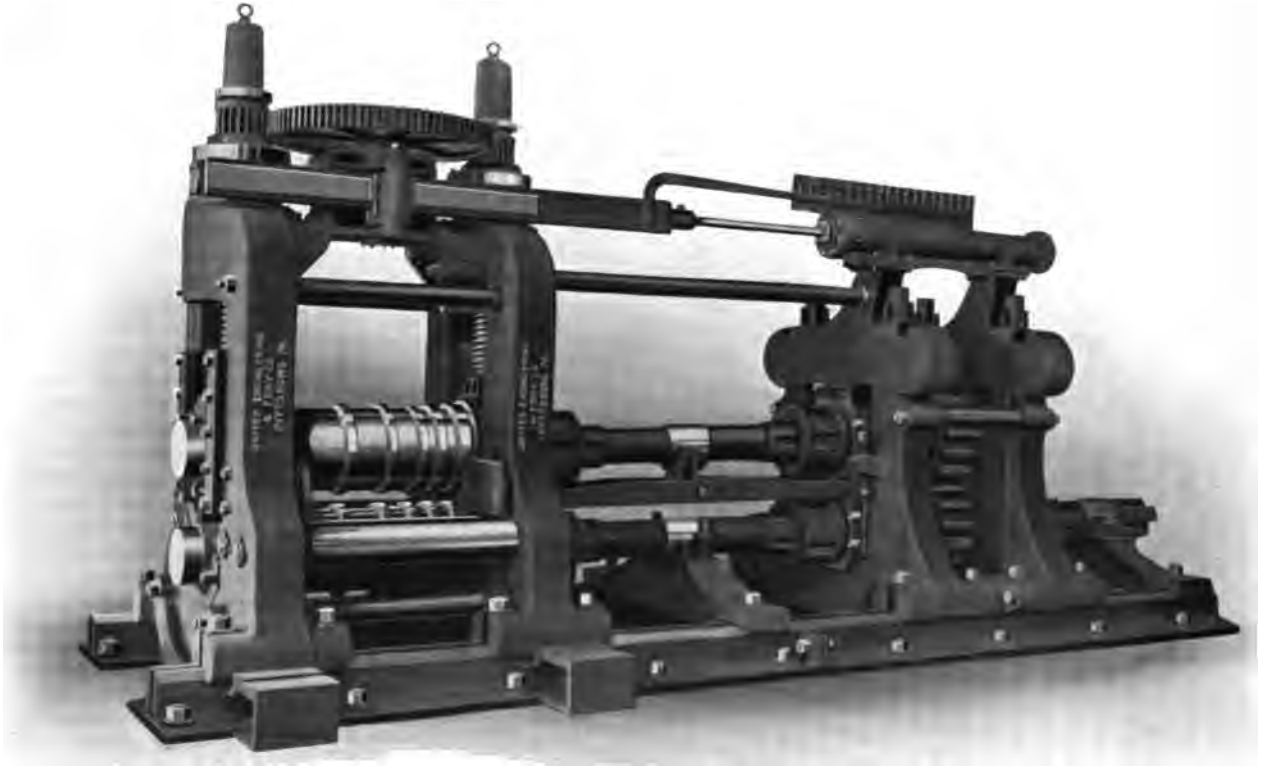


ILLUSTRATION NO. 42

36-INCH BLOOMING MILL

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

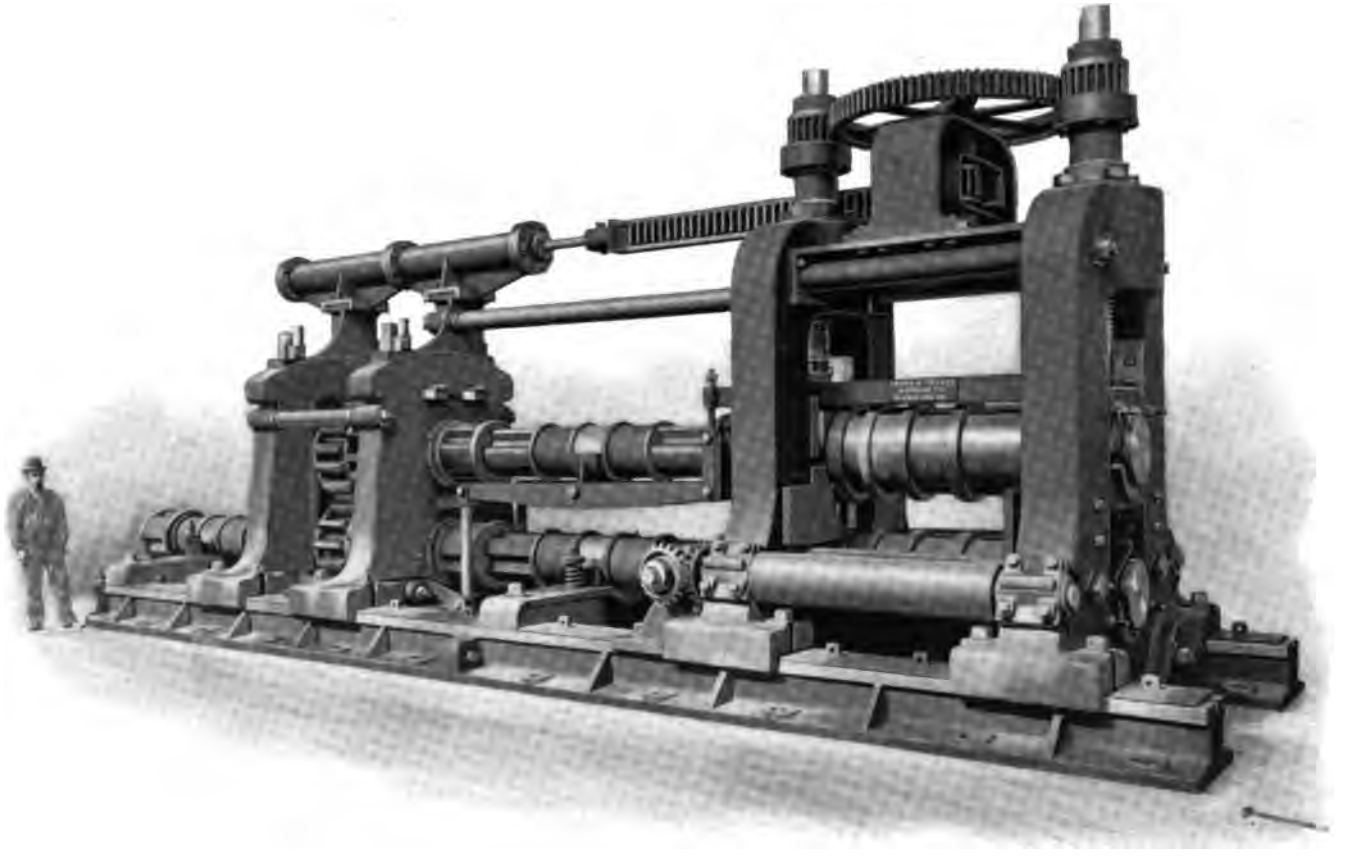


ILLUSTRATION No. 17

34-INCH BLOOMING MILL

ILLUSTRATION NO. 400

34 x 128-INCH PLATE MILL AND TABLES

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

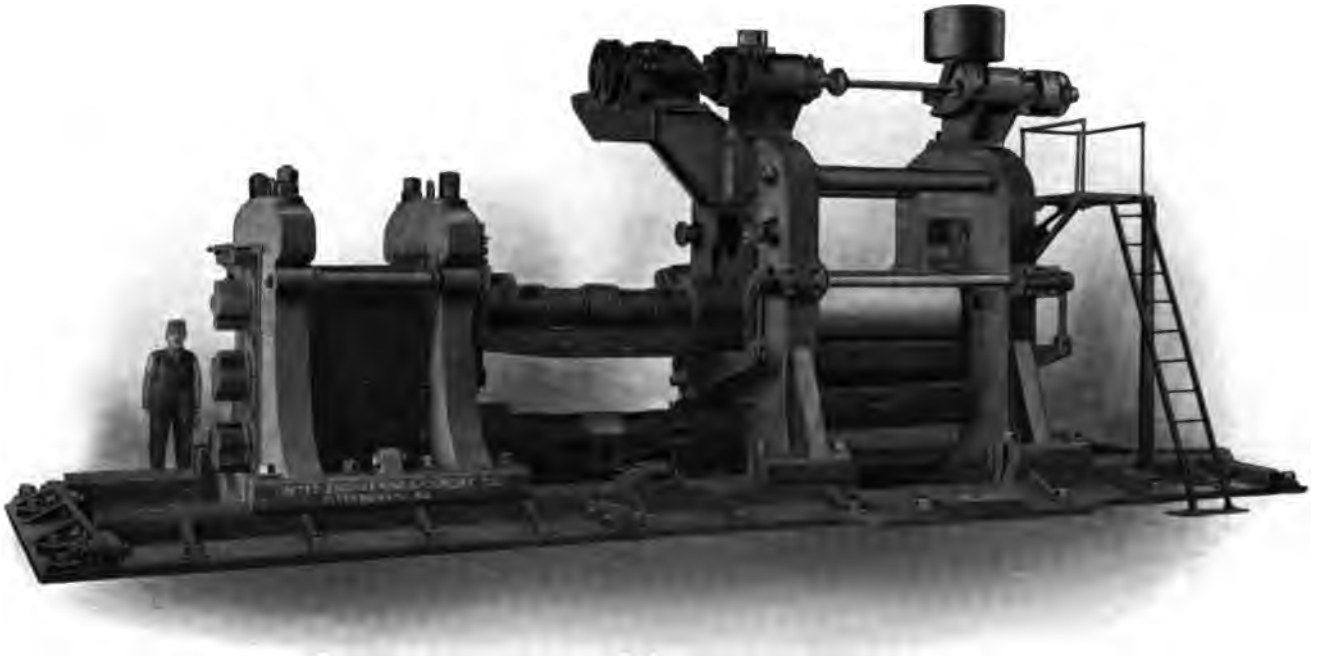


ILLUSTRATION No. 418

30 x 84-INCH PLATE MILL

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

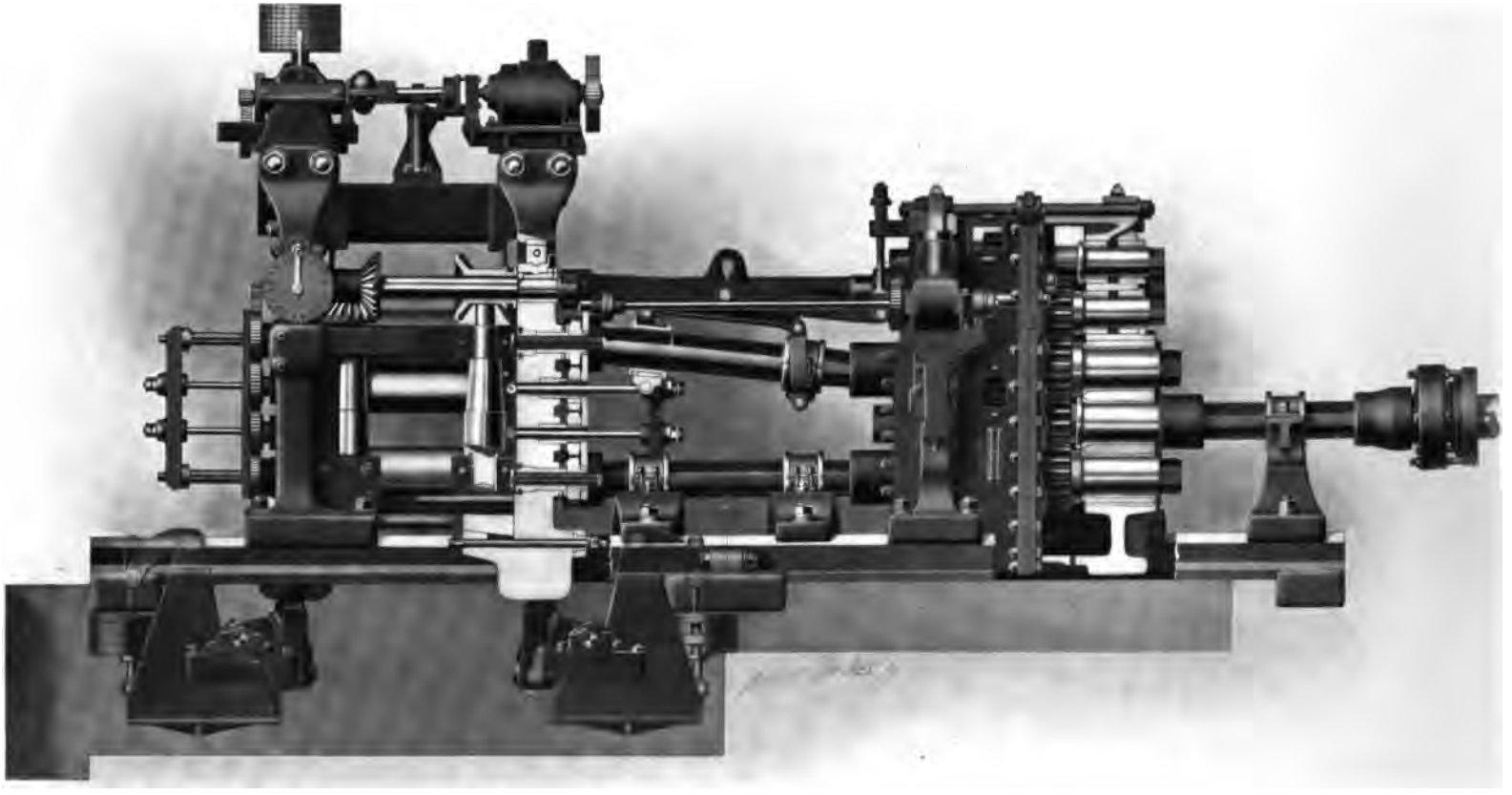


ILLUSTRATION No. 792

48–INCH THREE–HIGH UNIVERSAL MILL

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

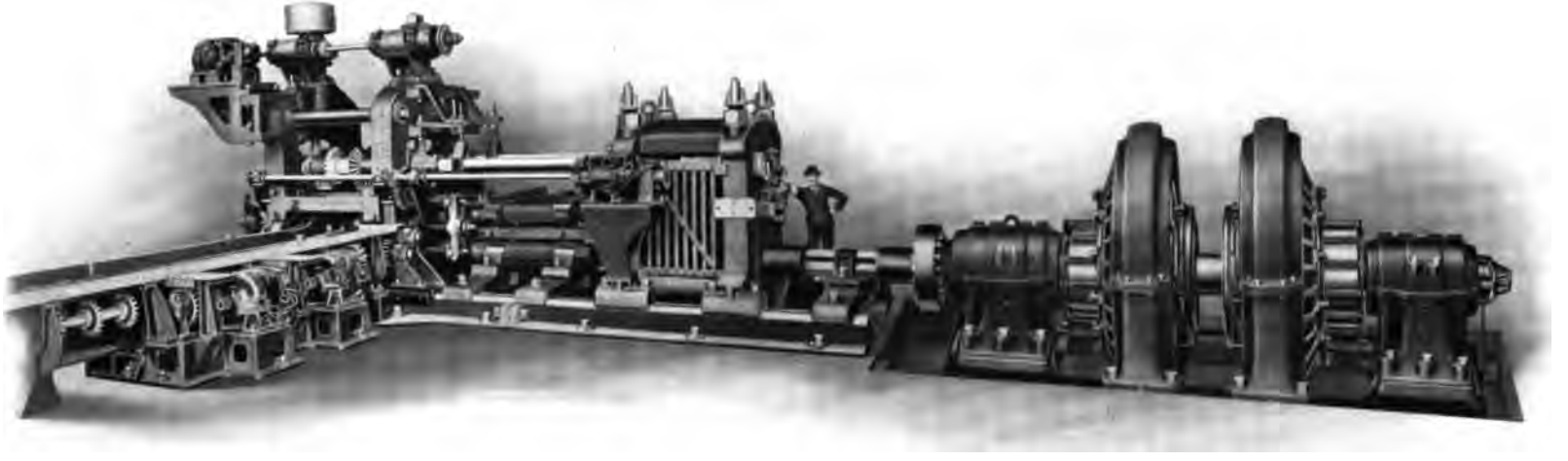


Illustration No. 663

30-INCH UNIVERSAL MILL AND TABLES—MOTOR DRIVEN
ILLINOIS STEEL COMPANY, SOUTH CHICAGO WORKS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

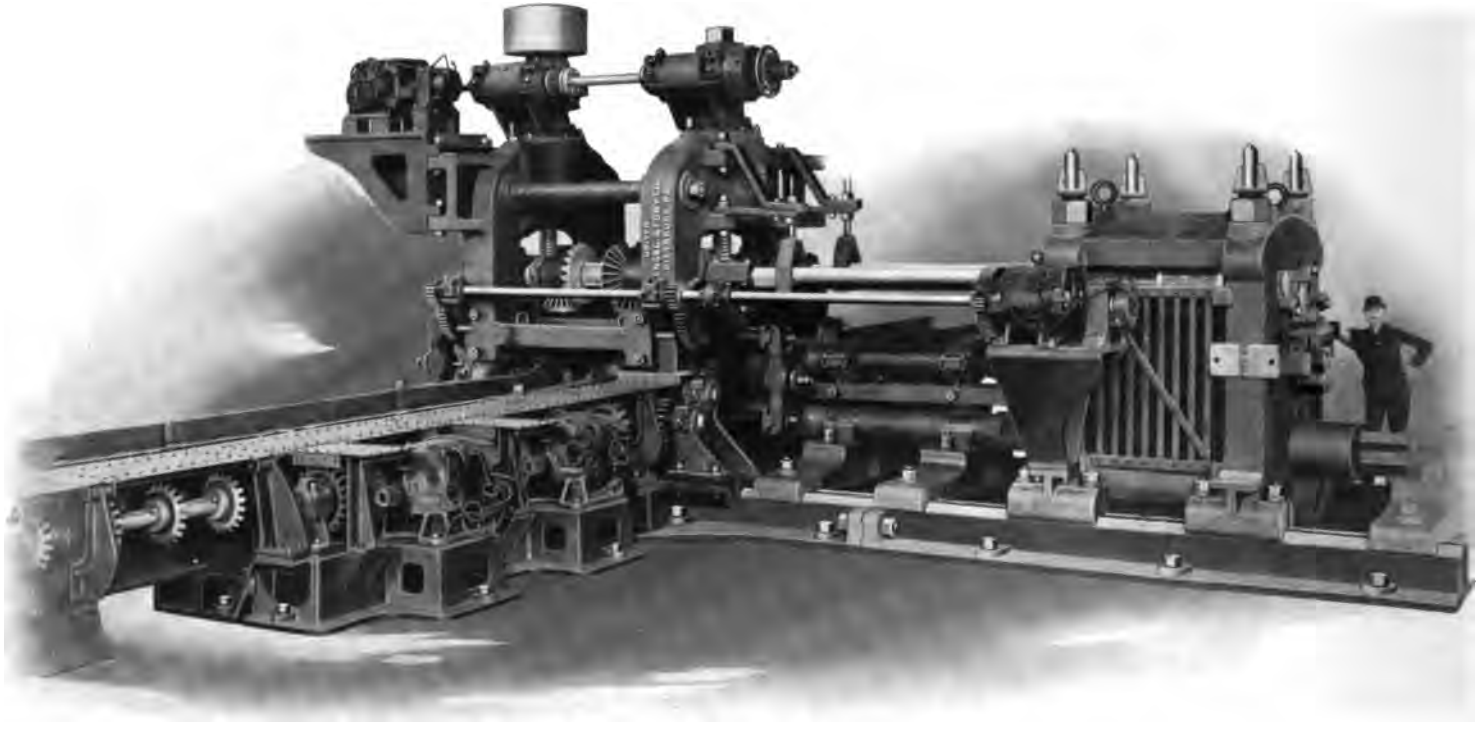


ILLUSTRATION No. 599

30-INCH UNIVERSAL PLATE MILL

DESIGNED AND BUILT FOR ILLINOIS STEEL COMPANY, SOUTH CHICAGO, ILLINOIS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

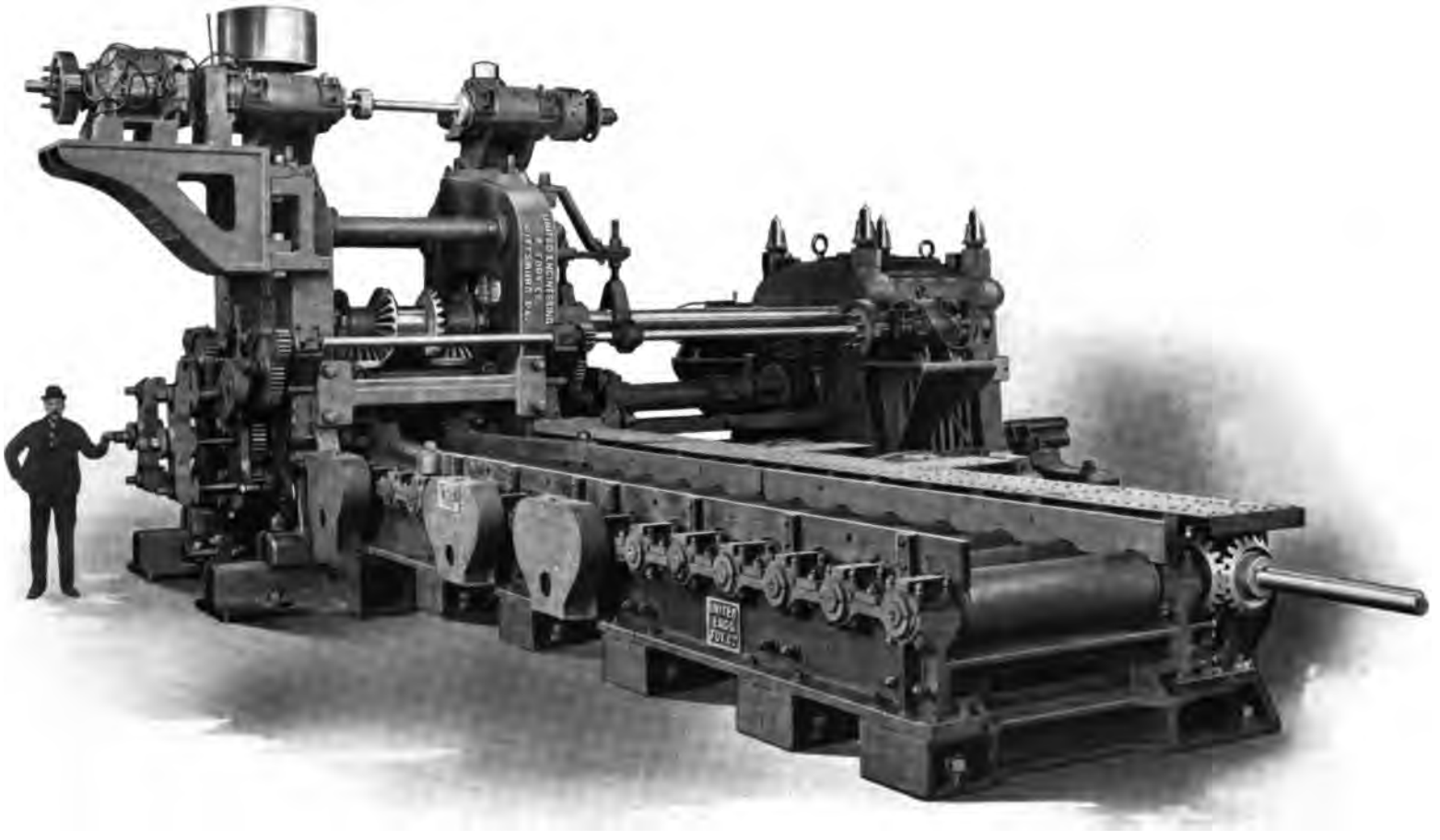


ILLUSTRATION No. 600

30-INCH UNIVERSAL PLATE MILL

DESIGNED AND BUILT FOR ILLINOIS STEEL COMPANY, SOUTH CHICAGO, ILLINOIS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 687

28-INCH THREE-HIGH
PINION HOUSINGS
ENCLOSED TYPE
FOR 28-INCH RAIL MILL

INDIANA STEEL COMPANY
GARY, INDIANA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

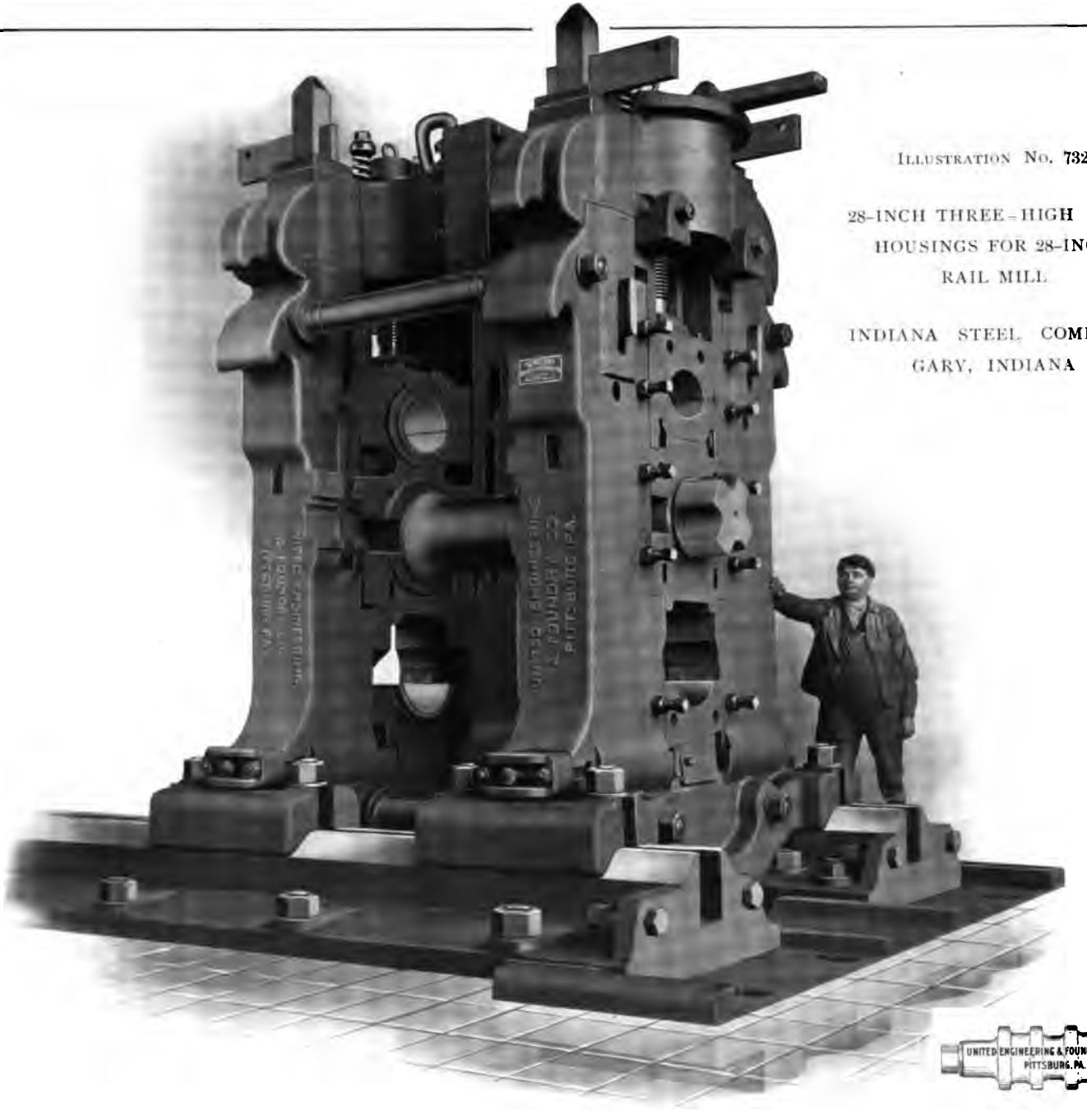


ILLUSTRATION No. 732

28-INCH THREE-HIGH ROLL
HOUSINGS FOR 28-INCH
RAIL MILL

INDIANA STEEL COMPANY
GARY, INDIANA

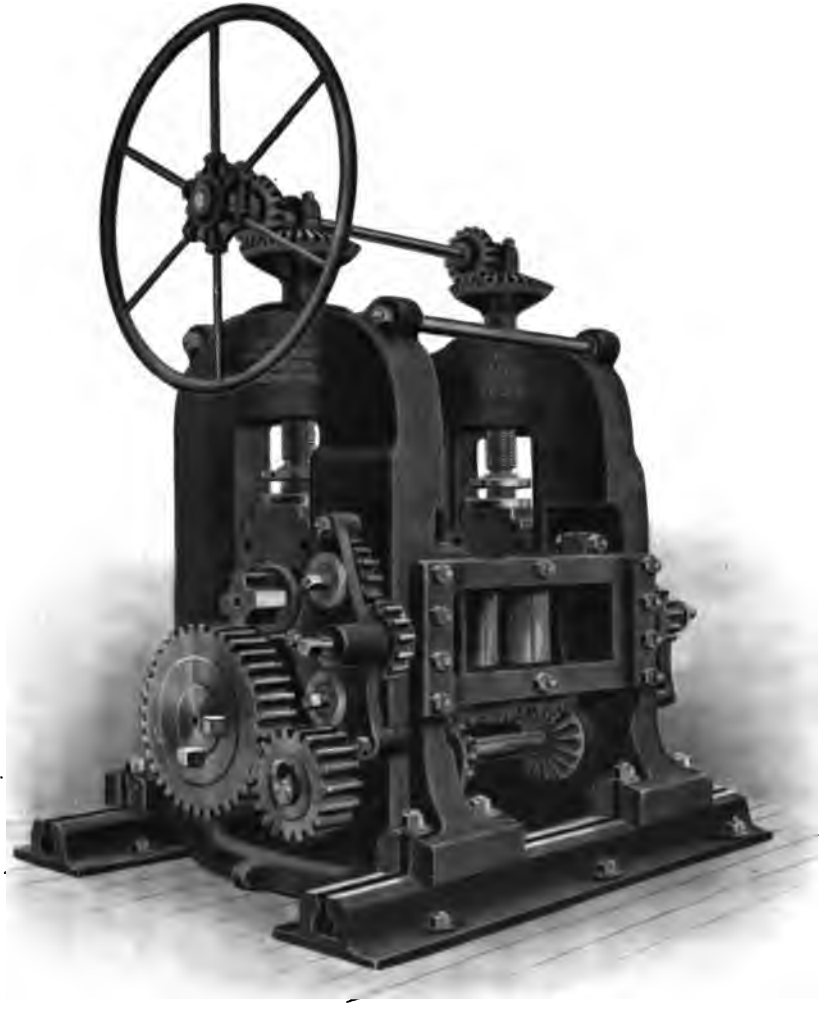


ILLUSTRATION No. 86

16-INCH UNIVERSAL MILL

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

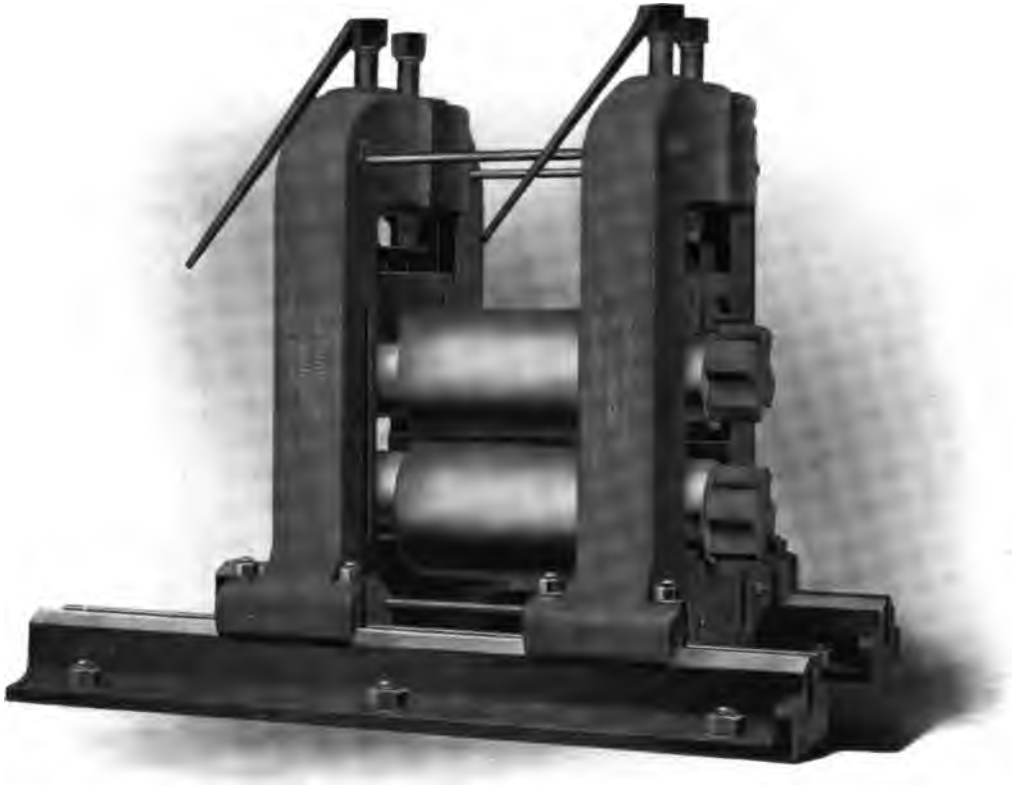
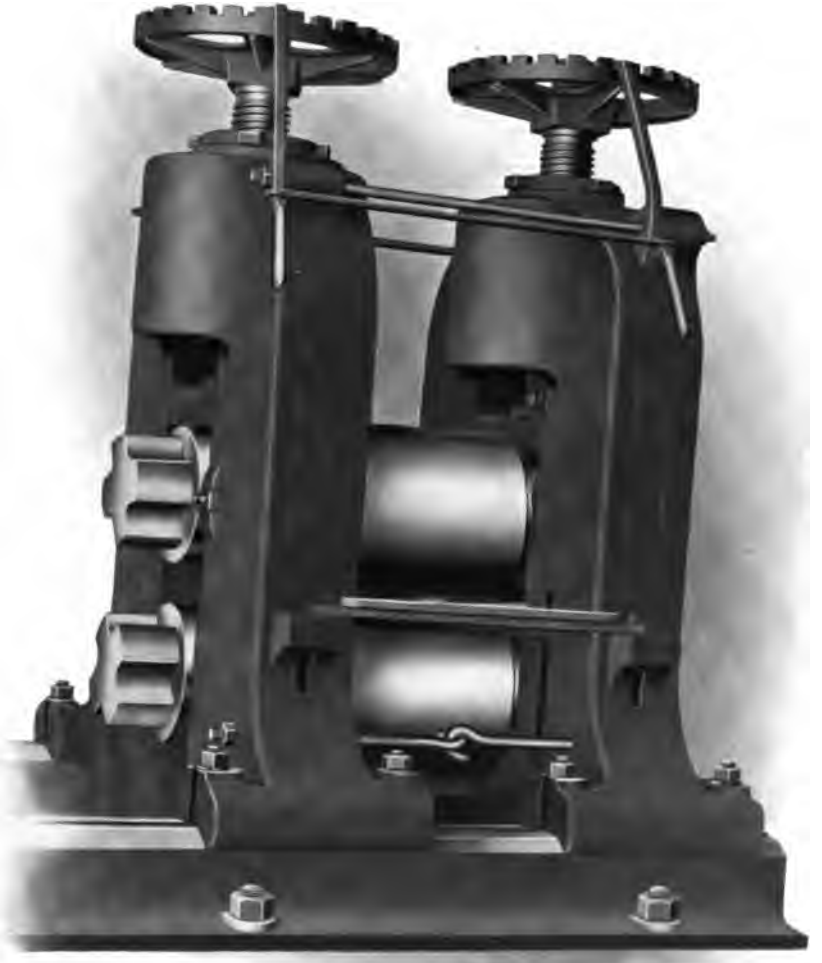


ILLUSTRATION No. 173

22-INCH TIN MILL COLD ROLLS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 172

24-INCH TIN PLATE MILL

ILLUSTRATION No. 127

SHEET MILL

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

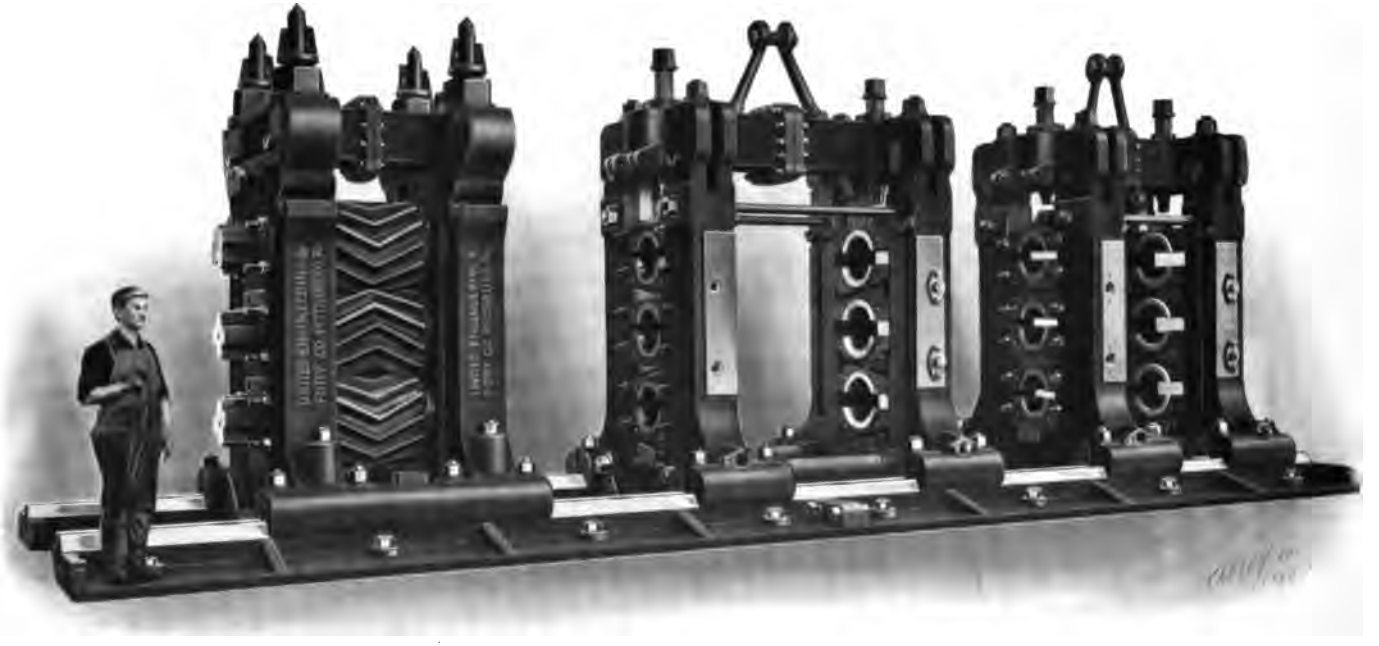


ILLUSTRATION No. 500

23-INCH RAIL MILL

BUILT FOR ILLINOIS STEEL COMPANY, SOUTH CHICAGO, ILLINOIS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

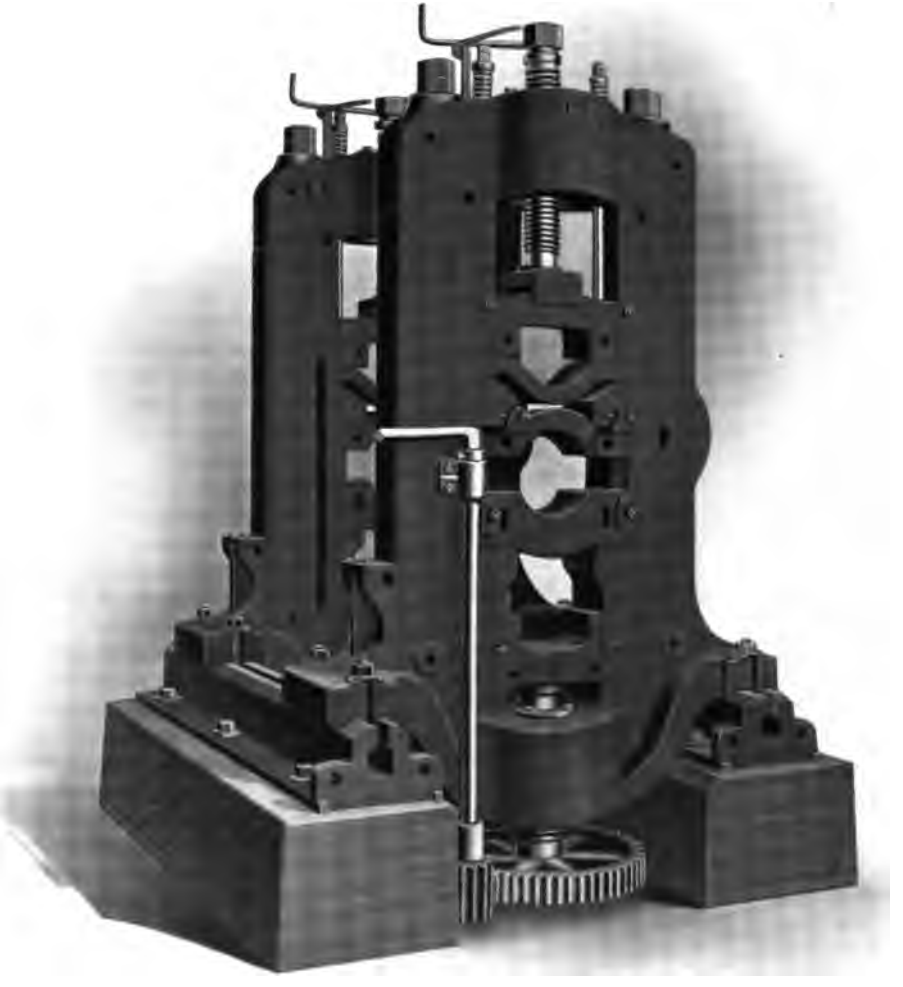


ILLUSTRATION No. 303

22-INCH MILL ROLL HOUSINGS WITH BOTTOM SCREWS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

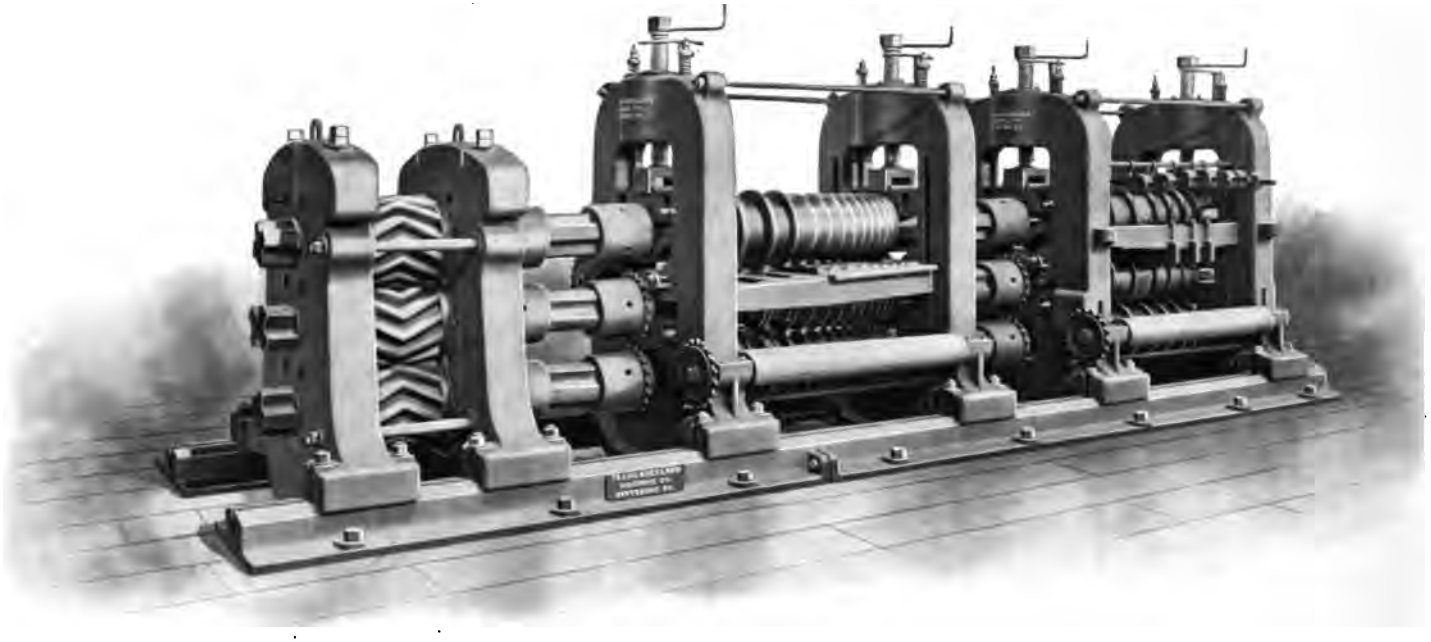


ILLUSTRATION No. 48

18-INCH BAR MILL

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

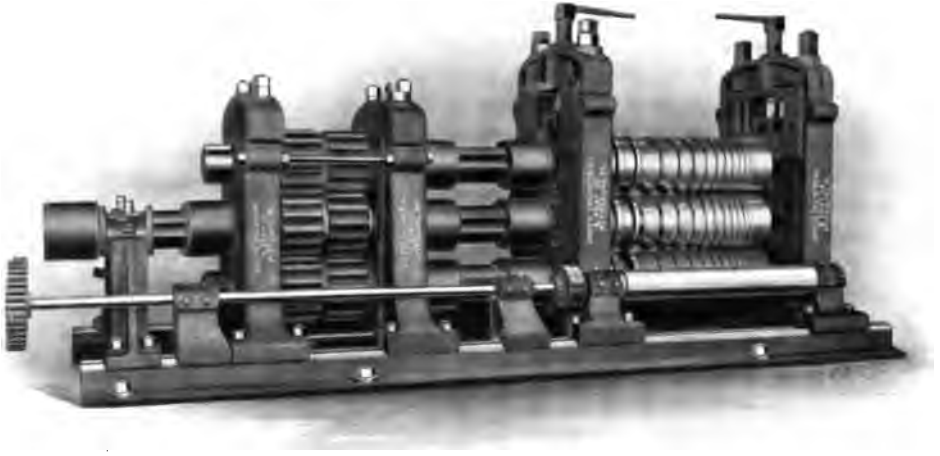


ILLUSTRATION NO. 245

16-INCH MERCHANT MILL — ROUGHING STAND

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

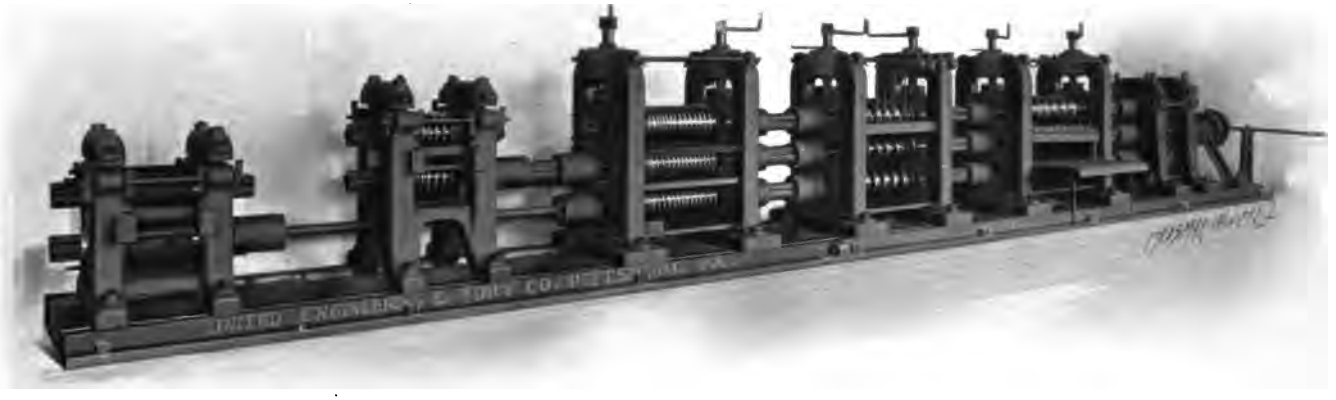


ILLUSTRATION No. 132

10-INCH MERCHANT MILL

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

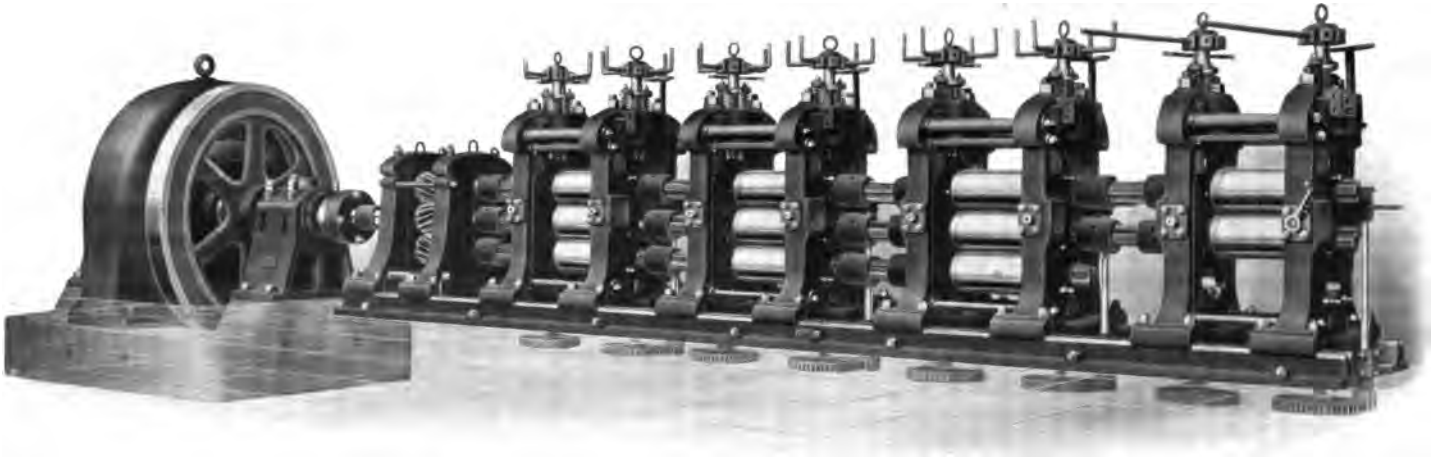


ILLUSTRATION No. 498

10-INCH MERCHANT MILL

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

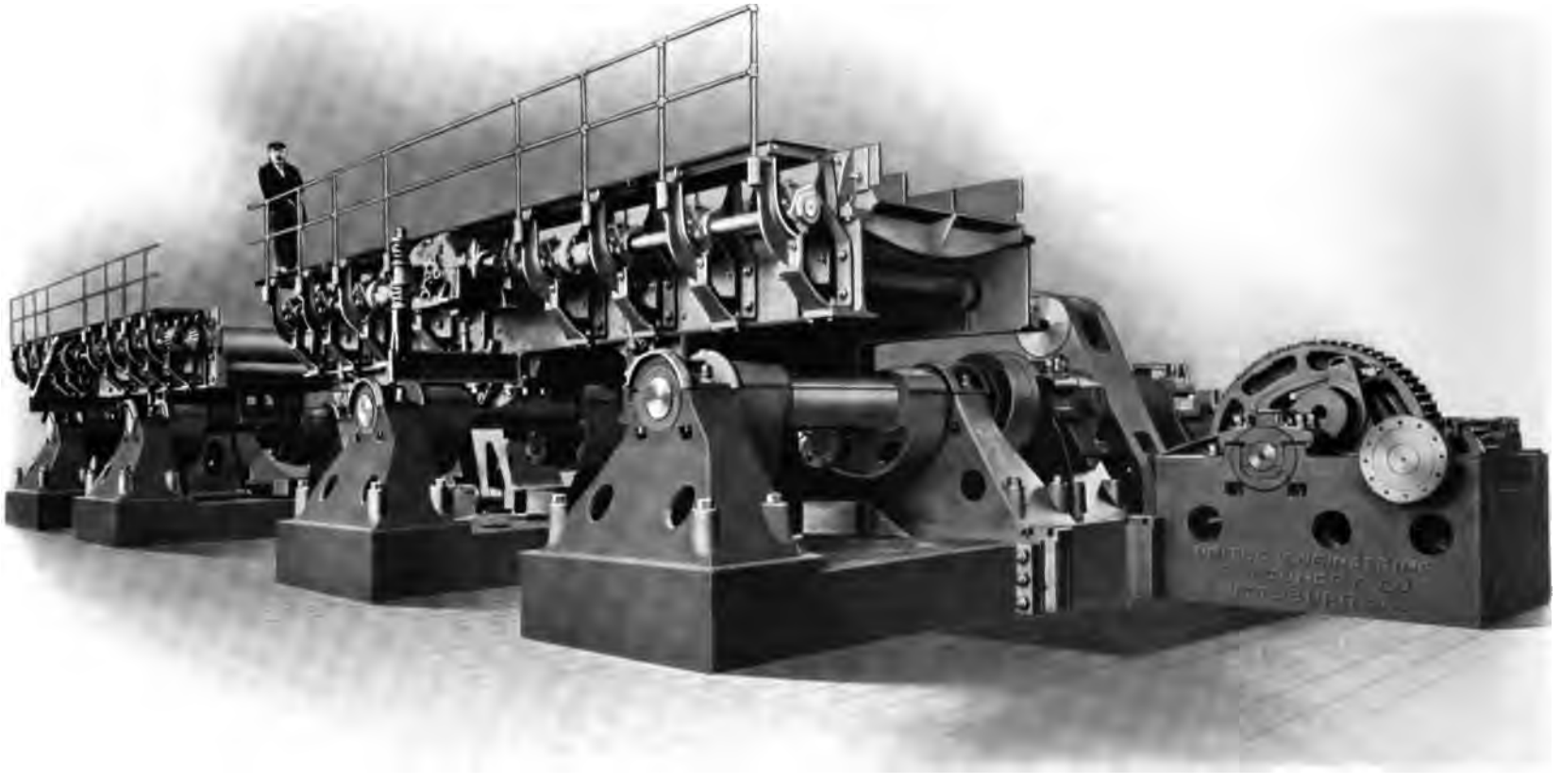


ILLUSTRATION No. 805

LIFTING TABLES FOR 40-INCH BLOOMING MILL
INDIANA STEEL COMPANY, GARY, INDIANA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

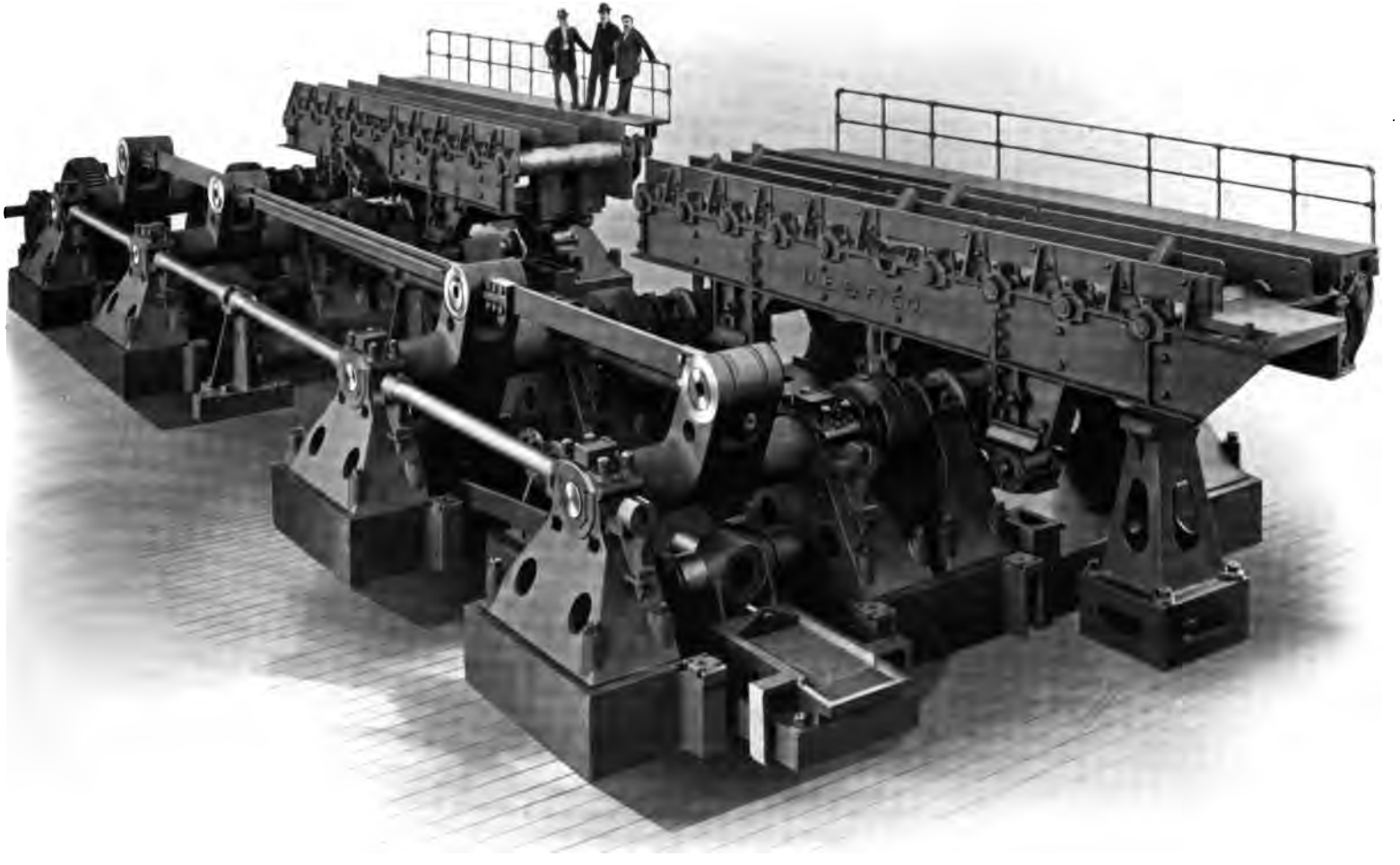


ILLUSTRATION No. 800

LIFTING TABLES FOR 40-INCH BLOOMING MILL
INDIANA STEEL COMPANY, GARY, INDIANA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

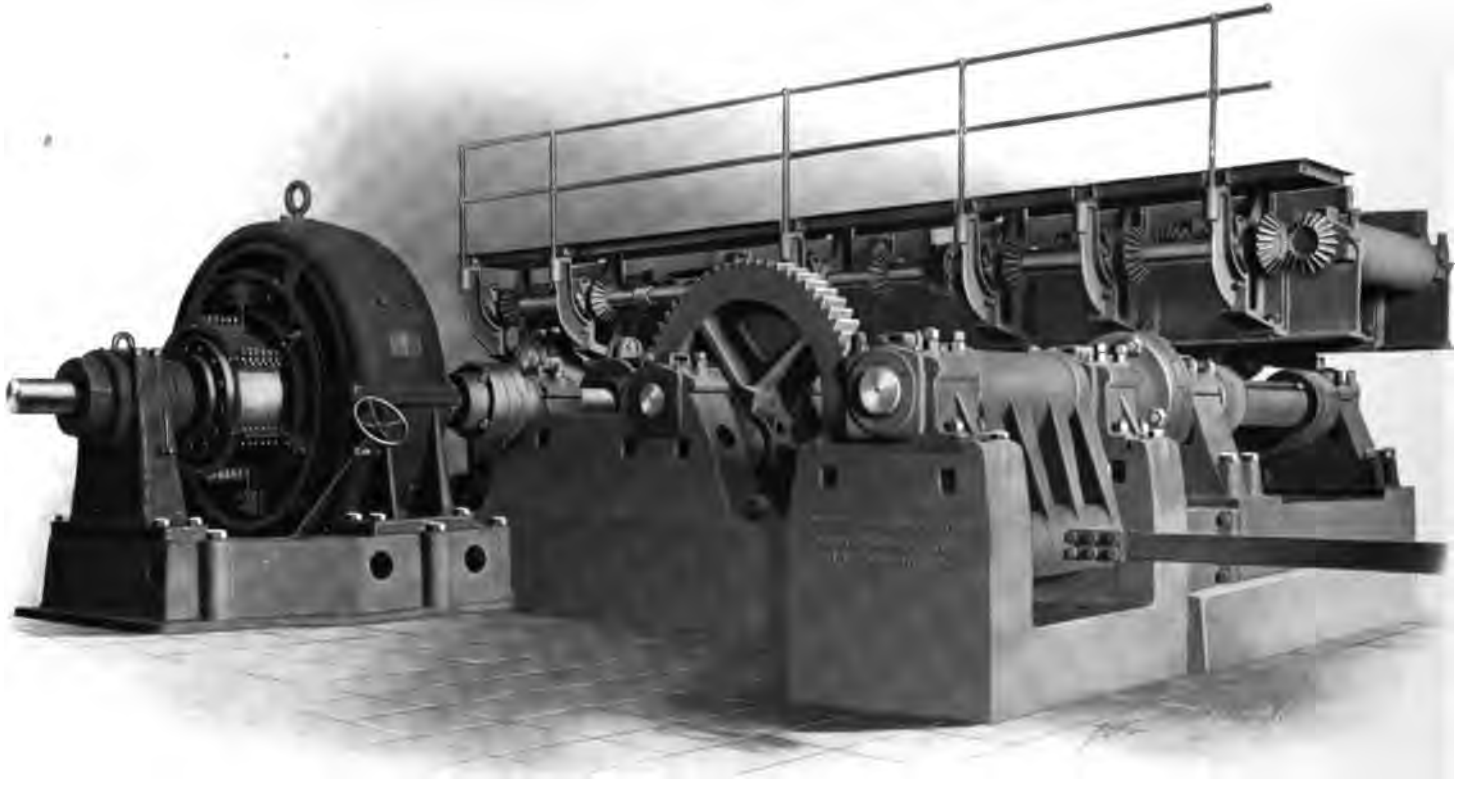


ILLUSTRATION NO. 777

TILTING TABLES FOR 28-INCH RAIL MILL
INDIANA STEEL COMPANY, GARY, INDIANA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

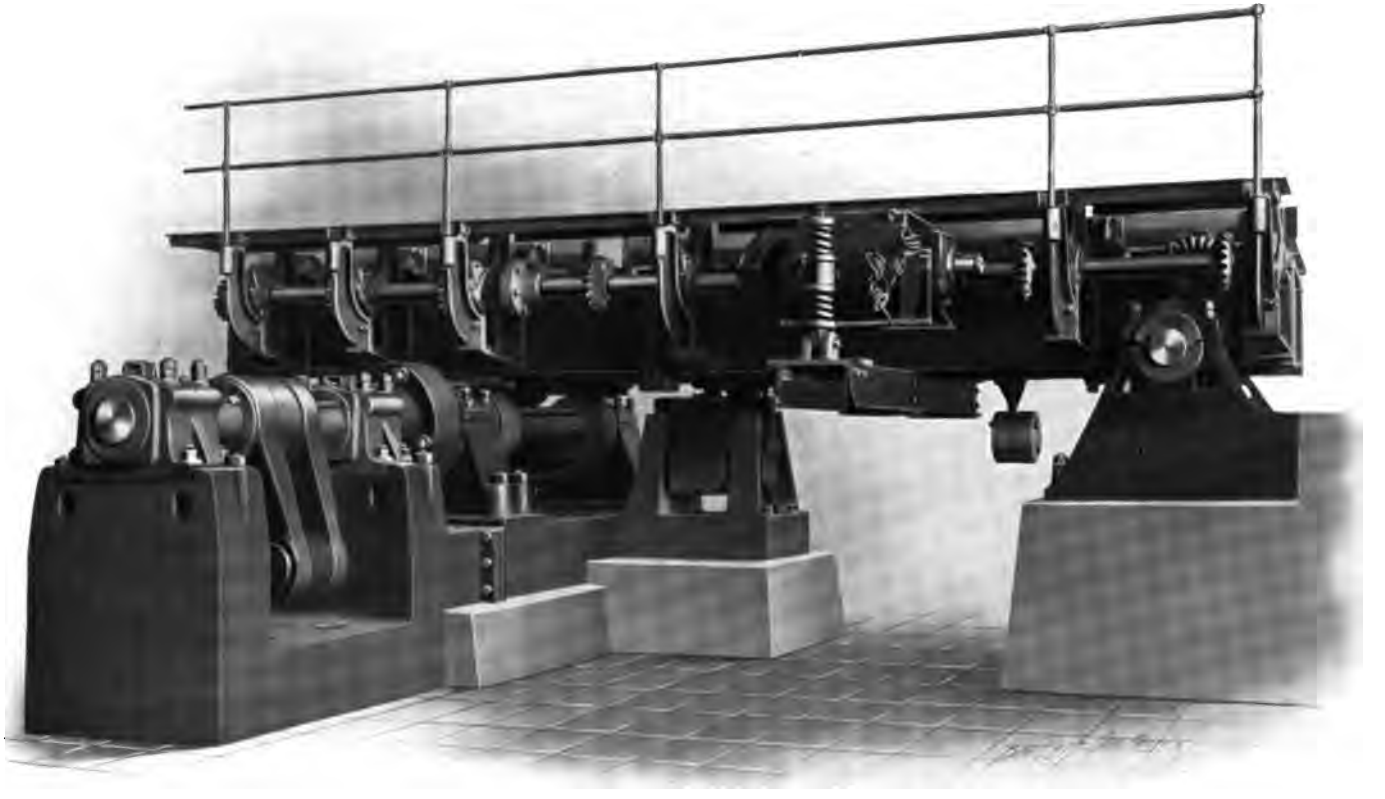


ILLUSTRATION No. 778

TILTING TABLES FOR 28-INCH RAIL MILL
INDIANA STEEL COMPANY, GARY, INDIANA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

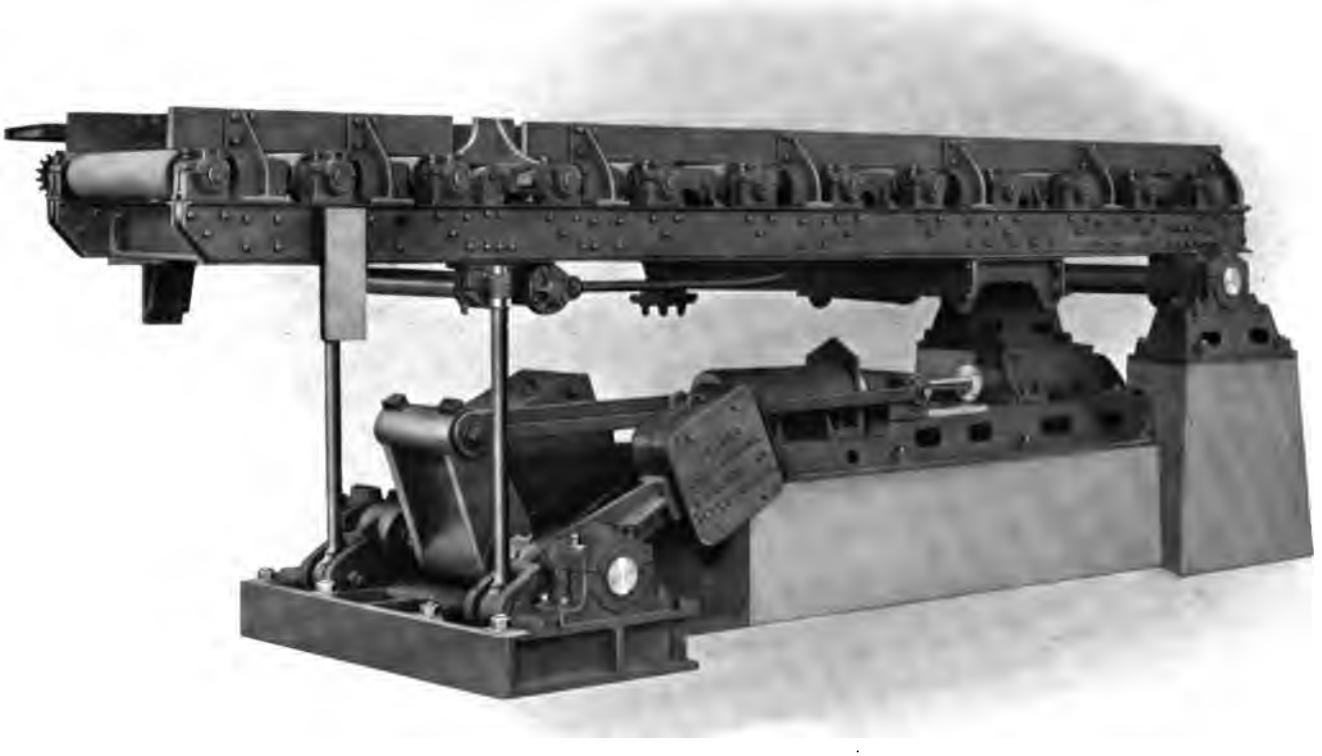


ILLUSTRATION No. 568

TILTING TABLES FOR RAIL AND STRUCTURAL MILLS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

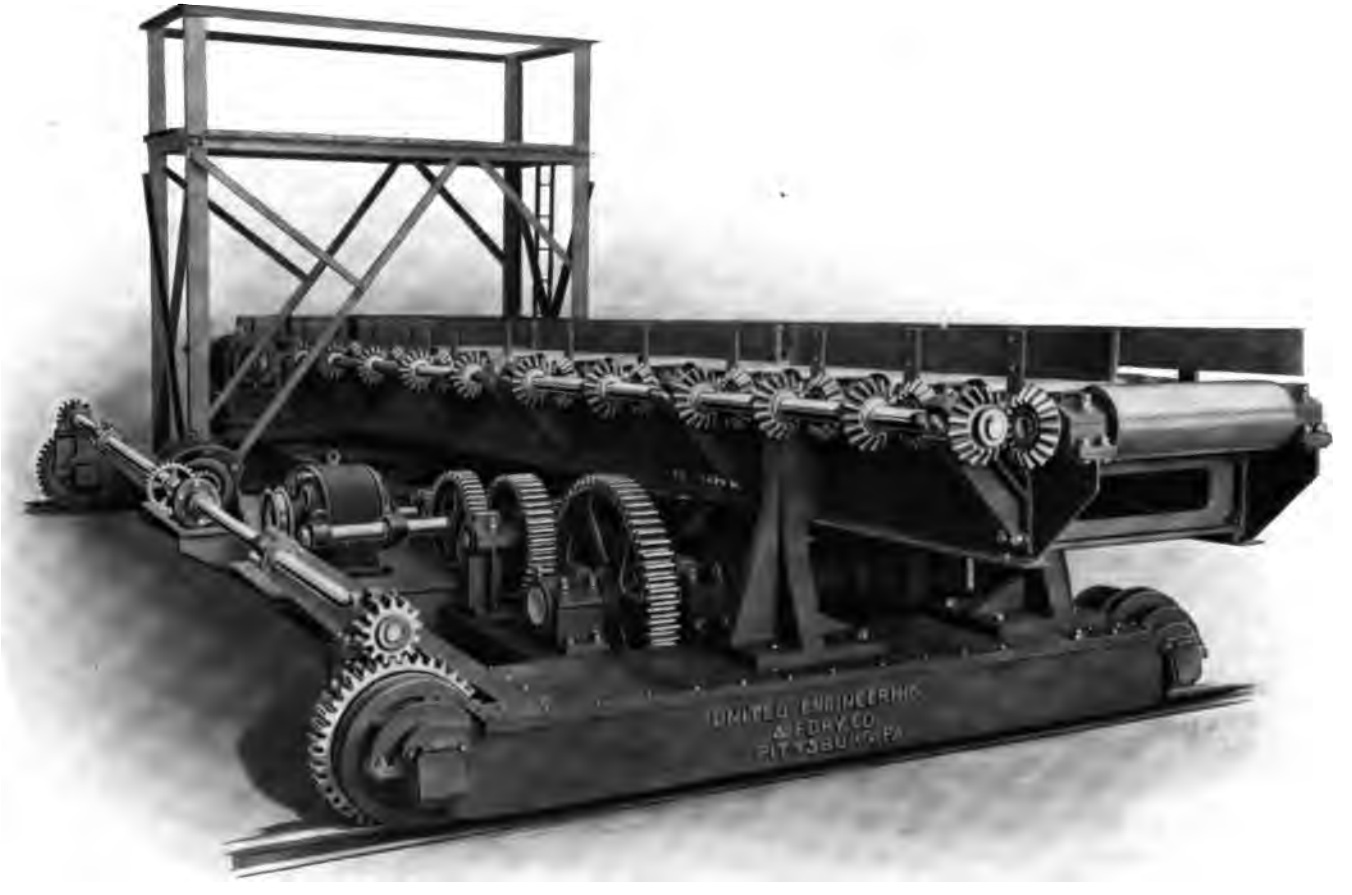


ILLUSTRATION No. 304

TILTING AND TRAVELING TABLES FOR RAIL AND STRUCTURAL MILLS

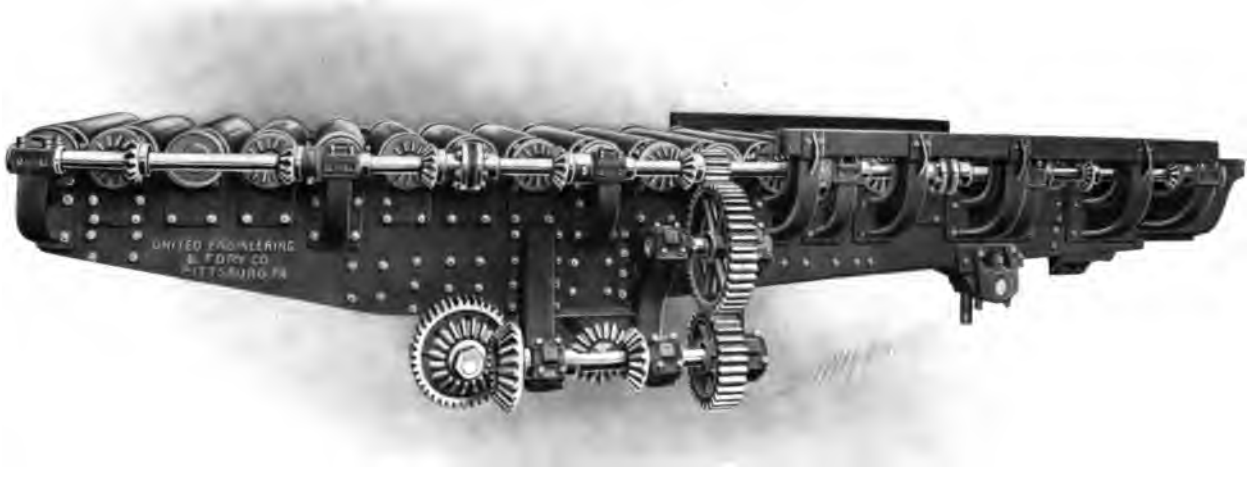


ILLUSTRATION NO. 261

127-INCH PLATE MILL TABLE

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

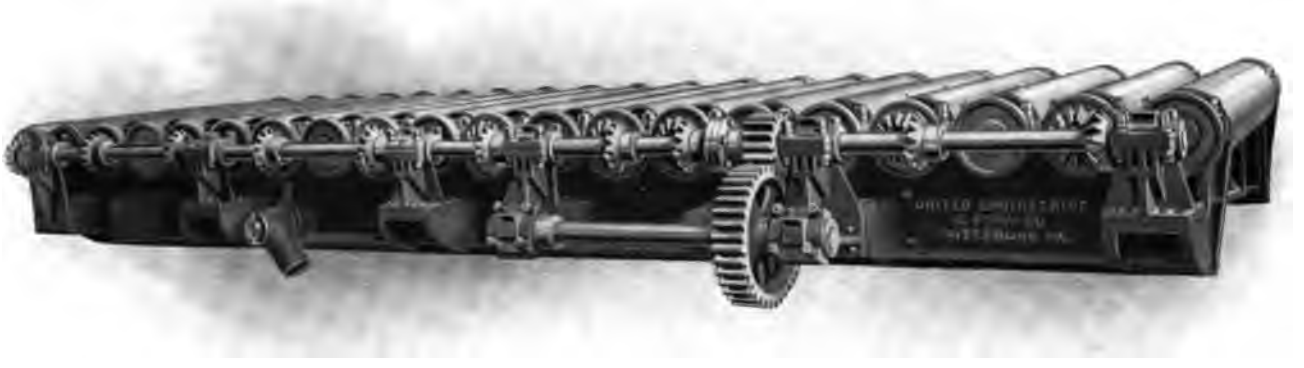


ILLUSTRATION No. 202

140-INCH PLATE MILL TABLE

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

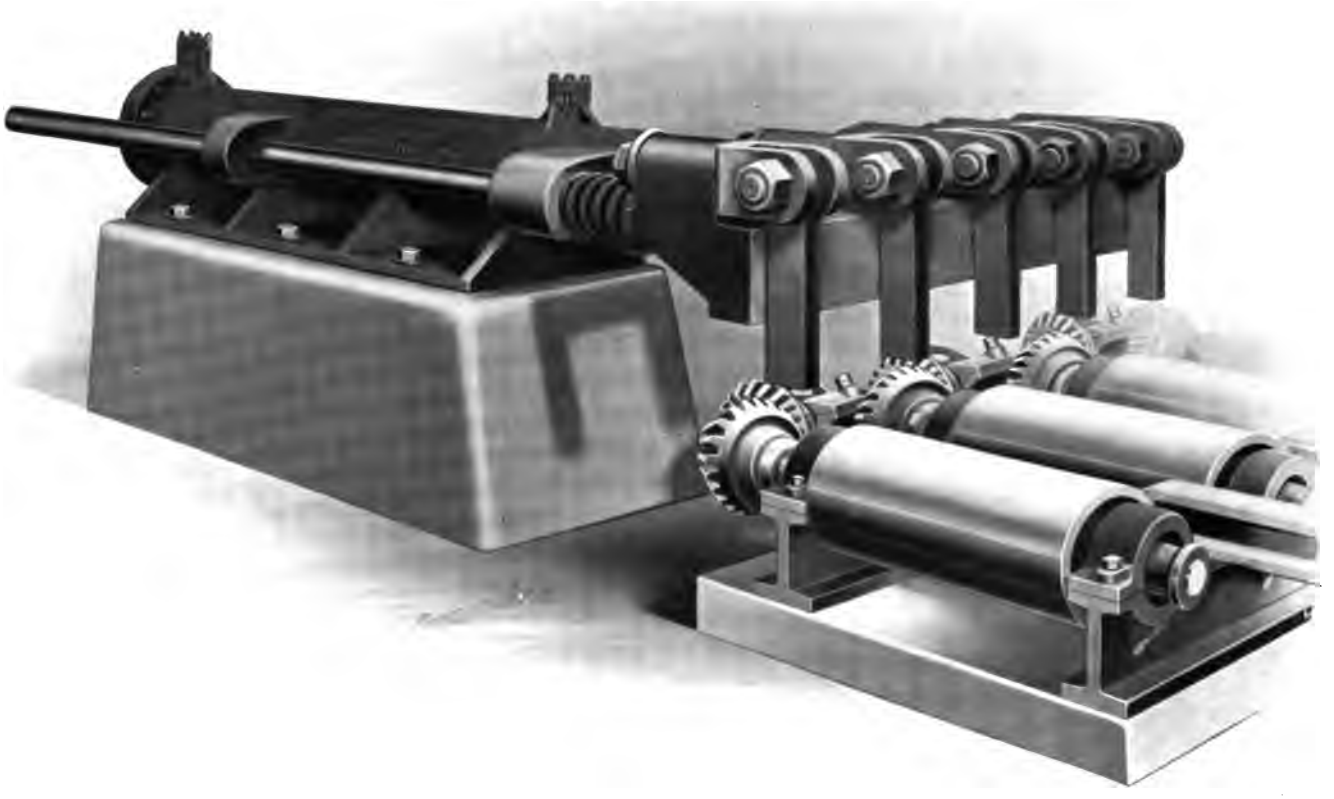


ILLUSTRATION NO. 628

HYDRAULIC BILLET PUSHER (PATENTED)

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

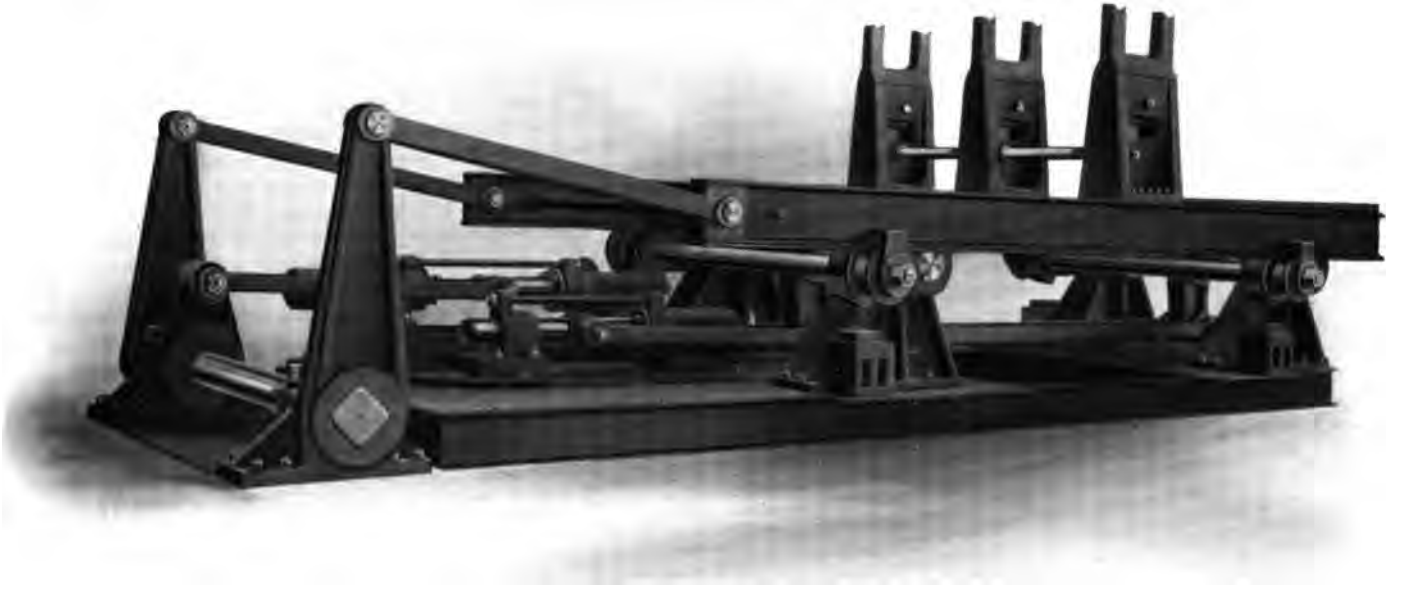


ILLUSTRATION No. 359

MANIPULATOR 40-INCH BLOOMING MILL
BUILT FOR ILLINOIS STEEL COMPANY

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

HYDRAULIC SHEARS

THIS type of shear is well adapted for use in cases where it is necessary to economize in space, or where it is not convenient to use any other kind of power.

We build these shears in all sizes from small tin bar shears up to the heaviest bloom and slab shears, to be operated with hydraulic pressure from 250 to 5000 pounds per square inch. These shears are designed throughout to give the greatest possible strength and rigidity, and are easily controlled by the operator.

They are especially desirable shears for use in connection with universal, slabbing or blooming mills, as they will stand rough usage with the minimum amount of care, being simple in design and having no complicated parts which are liable to break. The following illustrations show only a few of the various types of these shears which we build.

Illustrations Nos. 75, 104 and 440 show hydraulic intensifiers which we build for use with hydraulic shears, presses, etc. Illustration No. 407 shows an intensifier we build in connection with a 2000-ton hydraulic cotton compressor.

ILLUSTRATION NO. 192

10-INCH HYDRAULIC TIN BAR SHEARS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

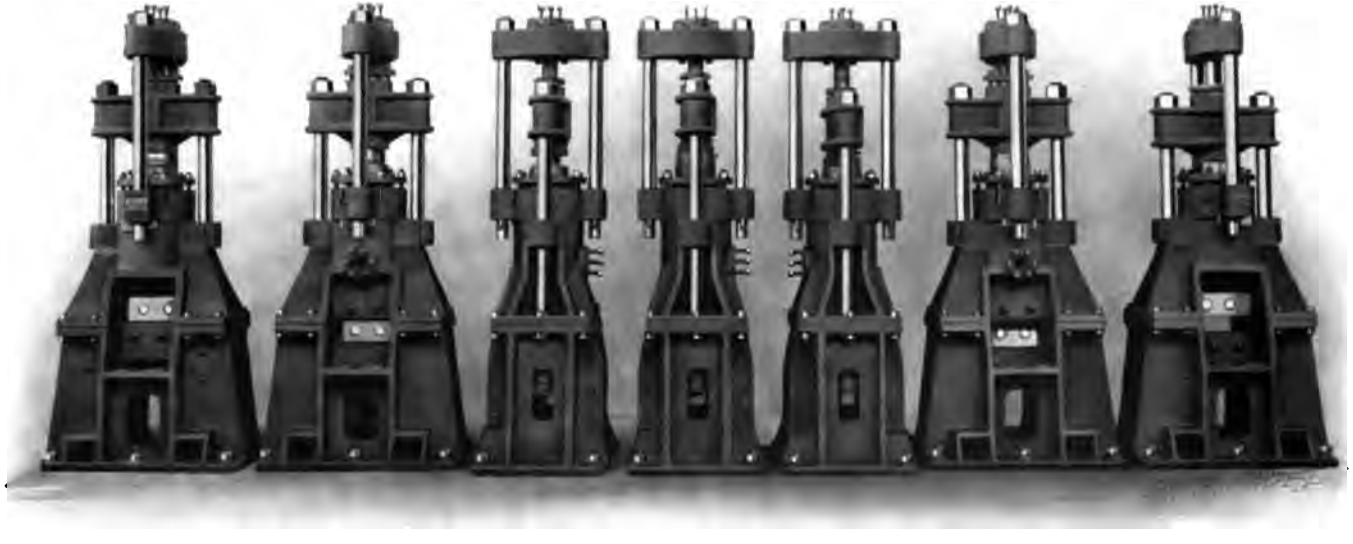


ILLUSTRATION No. 194

ROW OF 10-INCH HYDRAULIC TIN BAR SHEARS

ILLUSTRATION No. 191

16-INCH HYDRAULIC SHEAR

Capacity, 2 x 4-inch hot steel. We also build a 21-inch shear of similar design; capacity, 6 x 6-inch hot steel

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

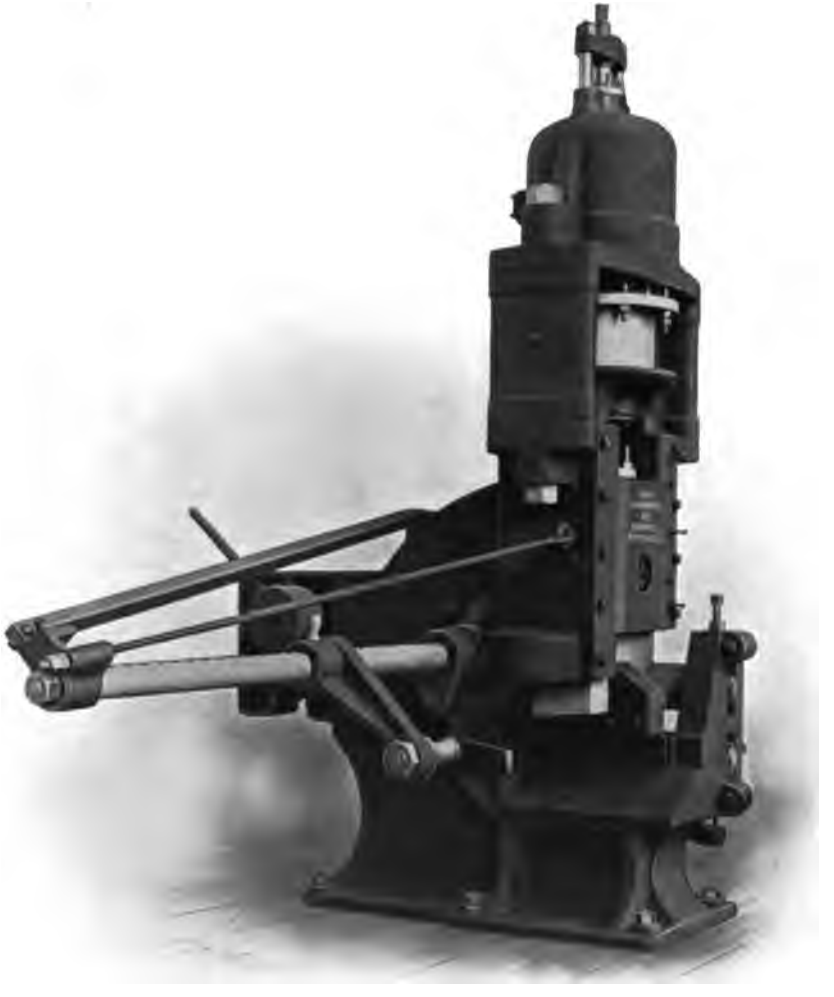


ILLUSTRATION No. 430

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

No. 3 VERTICAL HYDRAULIC BILLET SHEAR — WITH GAUGE

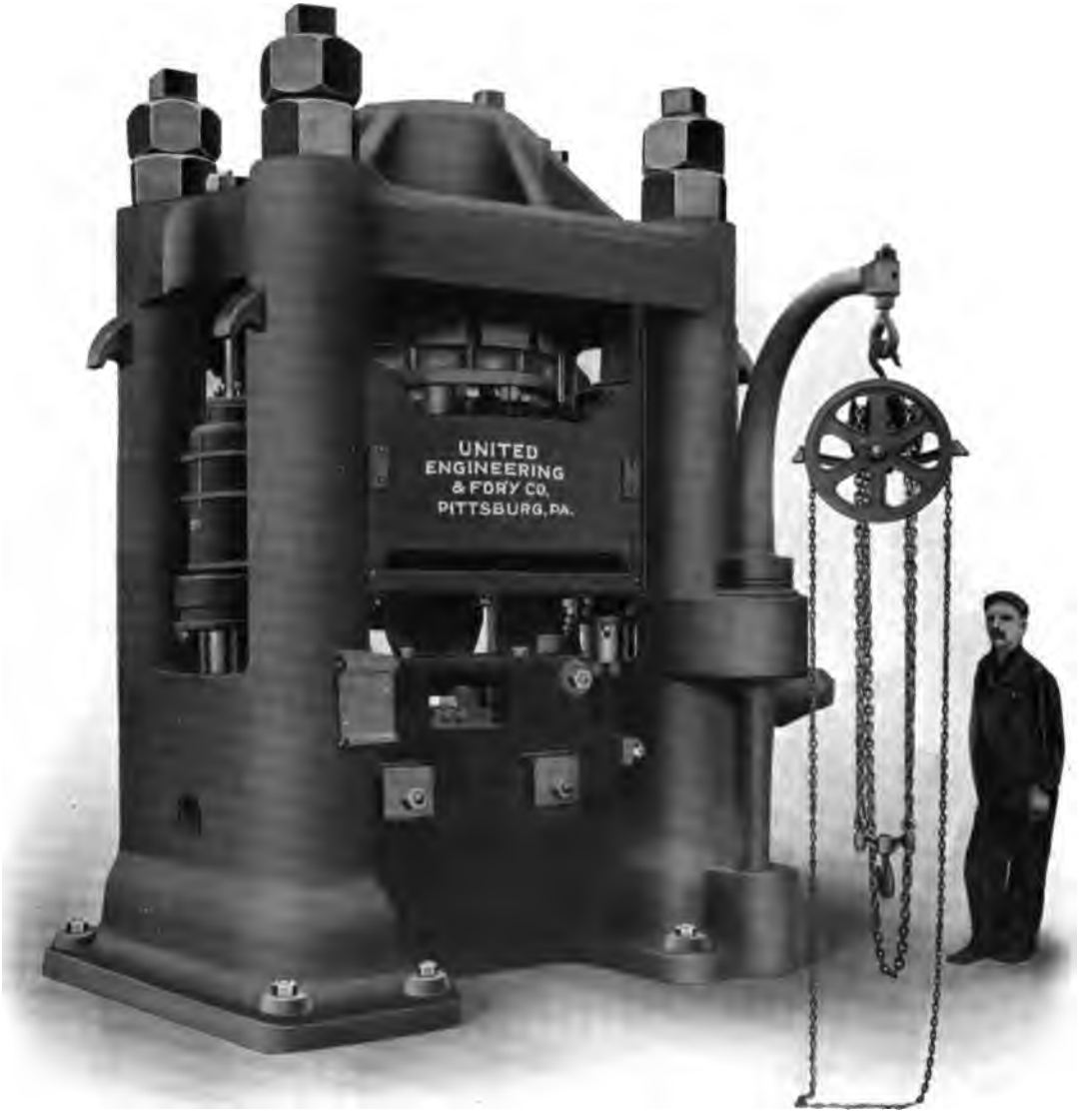
Capacity, 4 x 4-inch hot billets

ILLUSTRATION No. 431

No. 3 VERTICAL HYDRAULIC BILLET SHEAR—WITH GAUGE

Capacity, 4 x 4-inch hot billets

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 473

HYDRAULIC STRUCTURAL SHAPE SHEAR

Built in all sizes

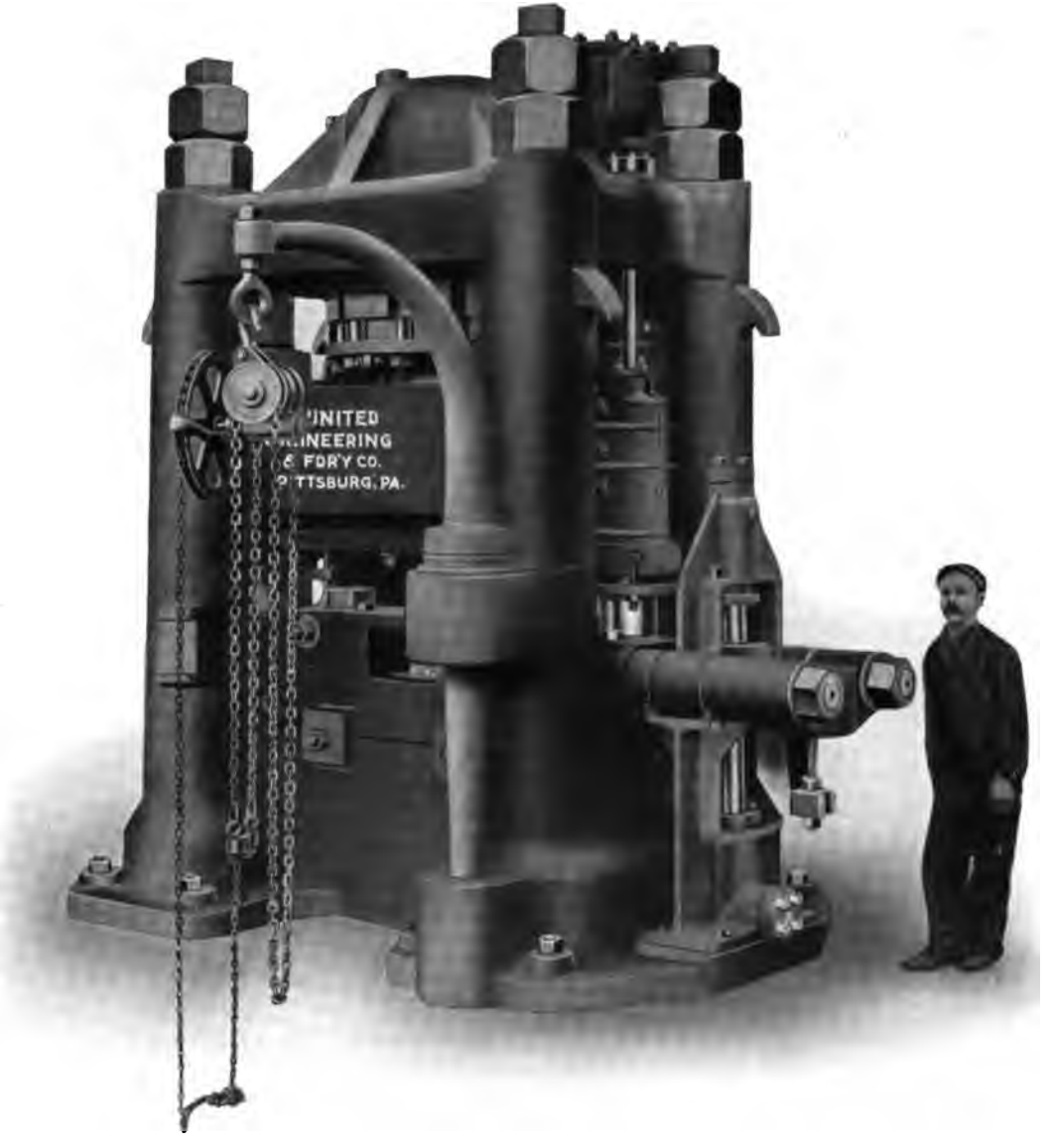


ILLUSTRATION NO. 475

HYDRAULIC STRUCTURAL SHAPE SHEAR

Built in all sizes

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 143

UP CUT 37-INCH HYDRAULIC SHEAR

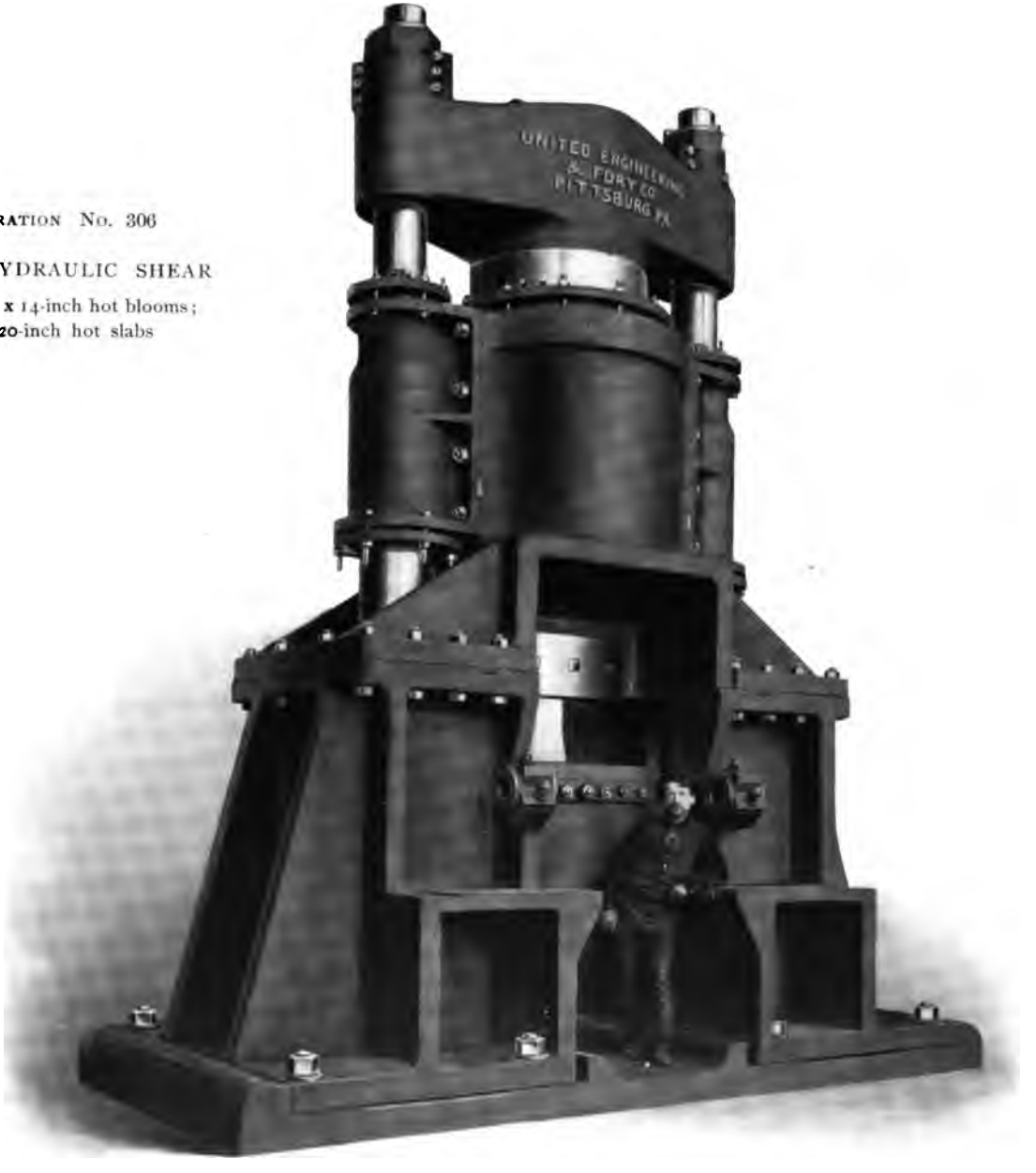
Capacity, 12 x 12-inch hot blooms;
or, 5 x 18-inch hot slabs

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 306

42-INCH HYDRAULIC SHEAR

Capacity, 14 x 14-inch hot blooms;
or, 6 x 20-inch hot slabs



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 337

THREE-CYLINDER HYDRAULIC BLOOM SHEAR

Capacity, 10 x 30-inch hot blooms

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

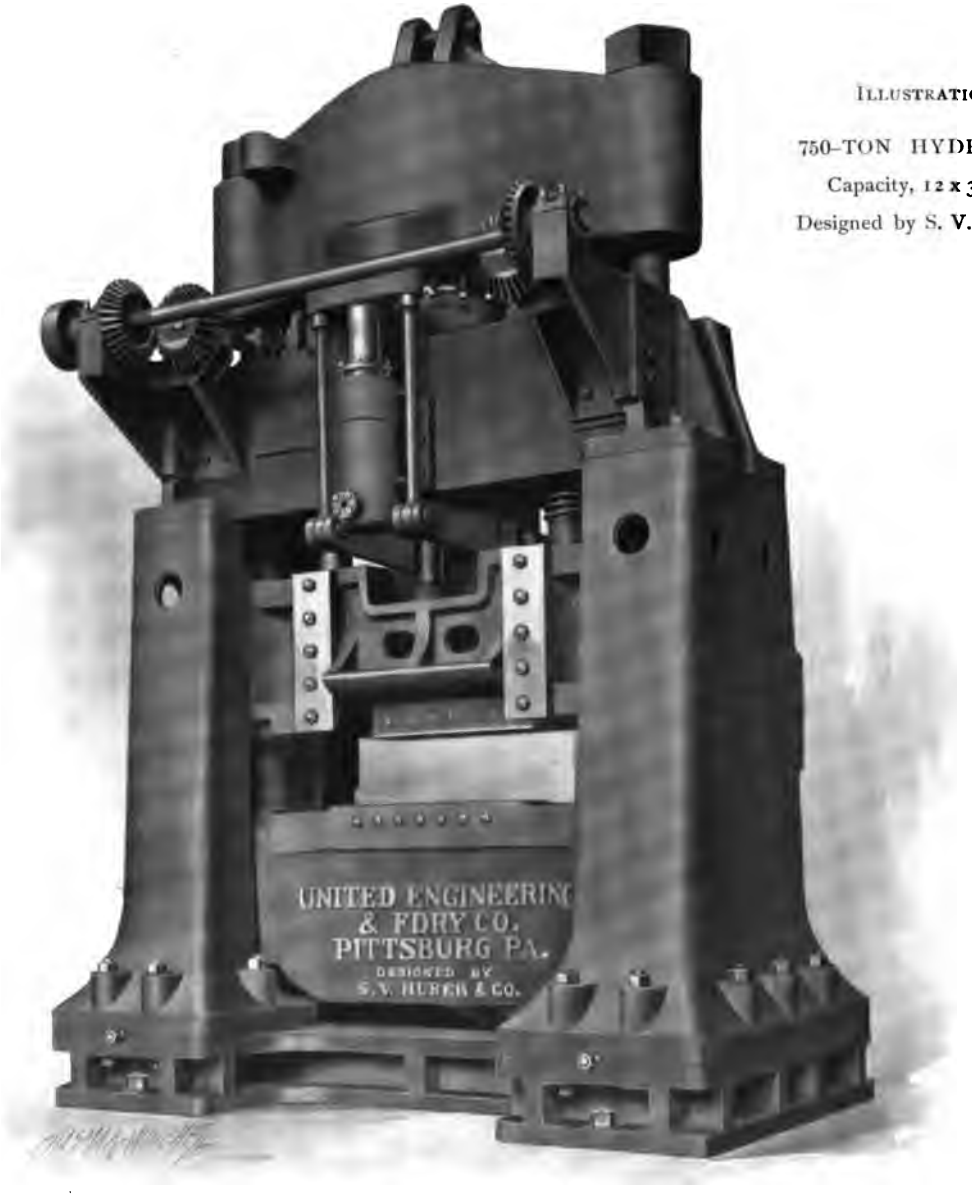


ILLUSTRATION No. 120

750-TON HYDRAULIC SHEAR

Capacity, 12 x 30-inch hot slabs

Designed by S. V. Huber & Company

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

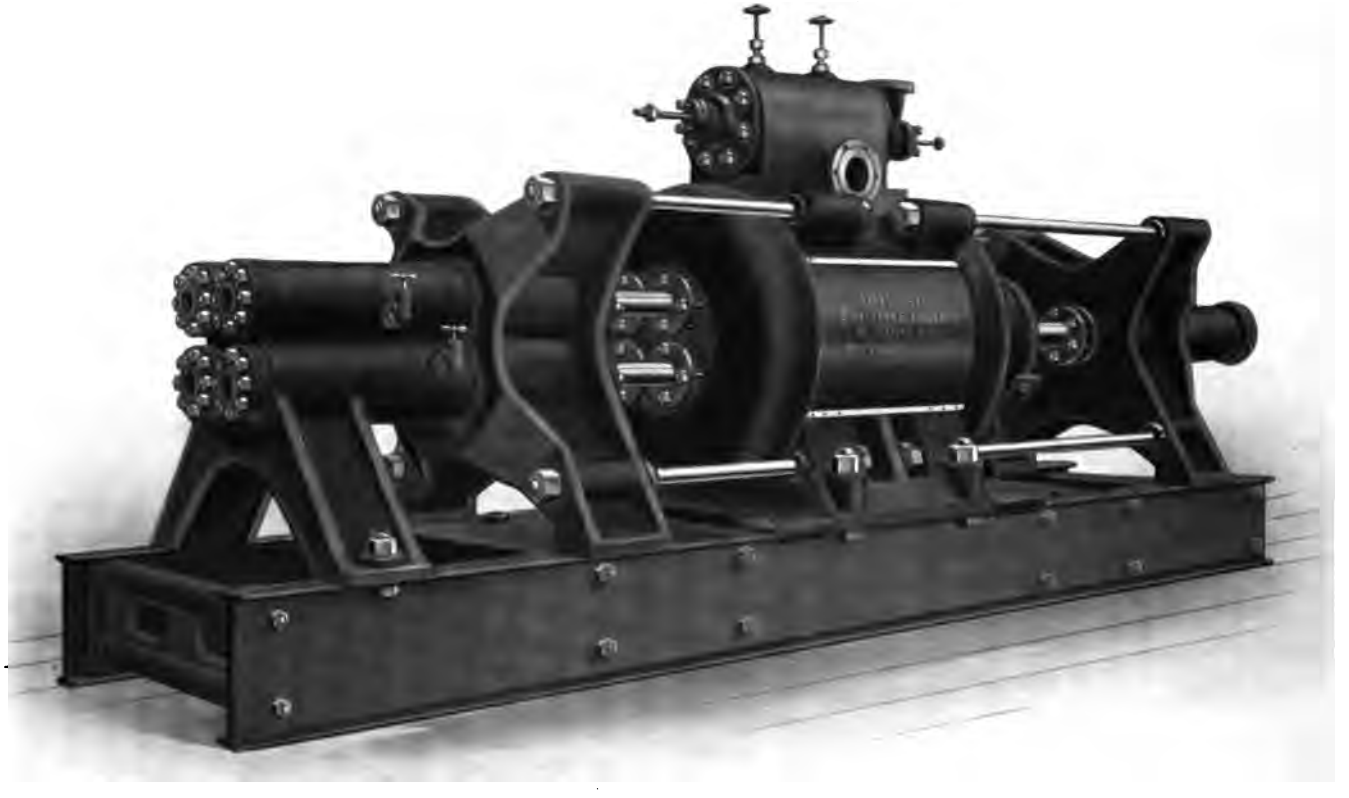


ILLUSTRATION No. 75

COMPOUND HYDRAULIC INTENSIFIER

Operated by steam cylinder

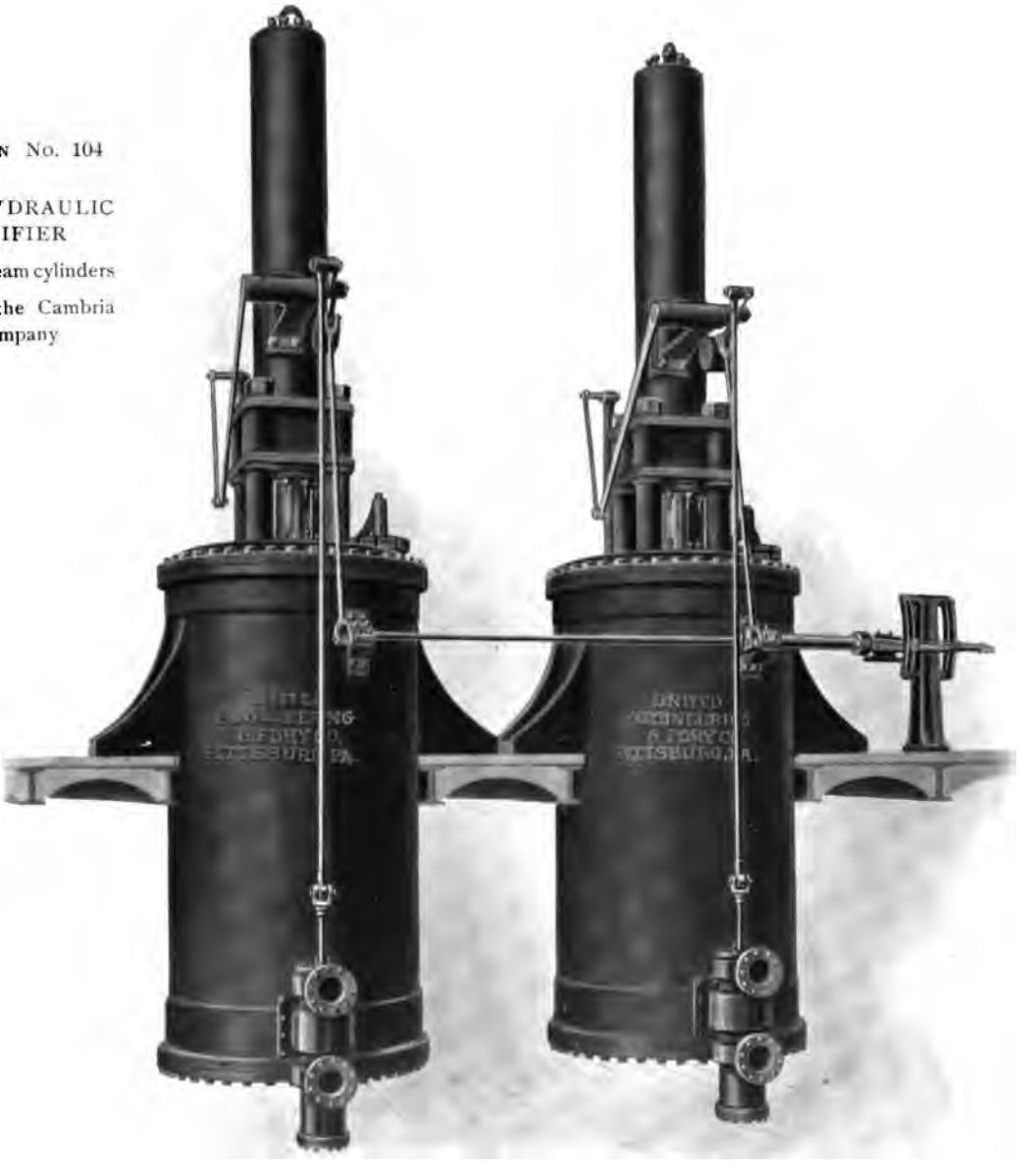
UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 104

DOUBLE HYDRAULIC INTENSIFIER

Operated by steam cylinders

Designed by the Cambria Steel Company



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 440

HYDRAULIC INTENSIFIER

Operated by steam cylinder

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

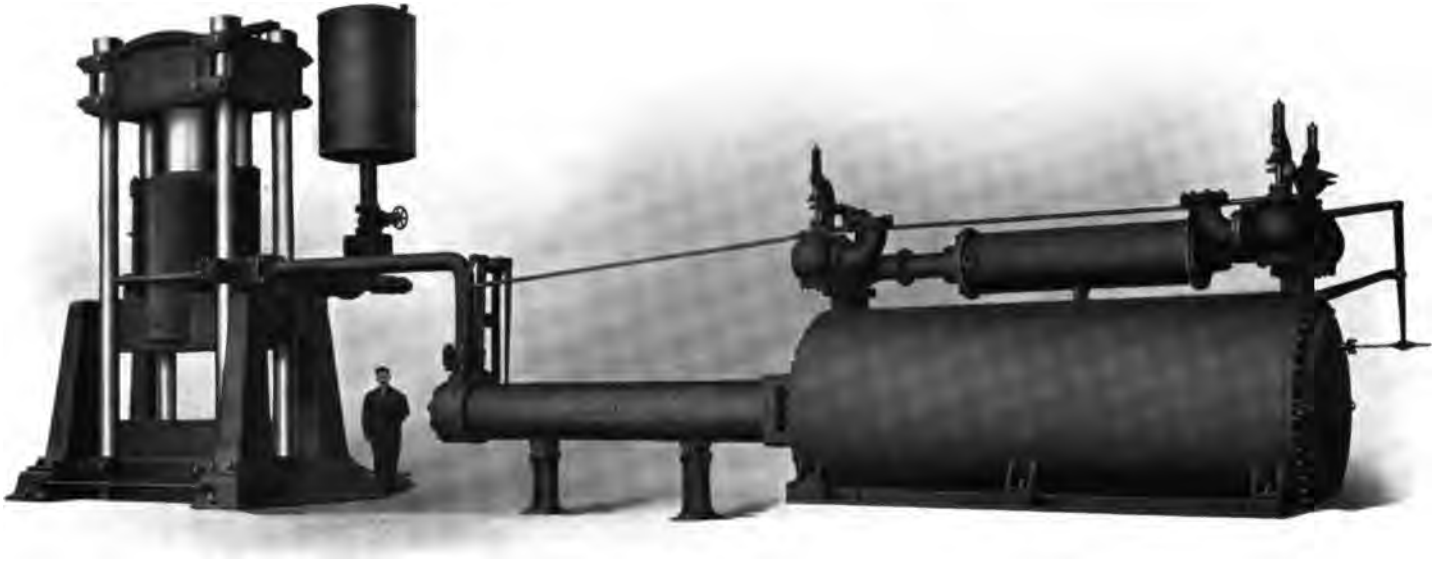


ILLUSTRATION No. 407

HYDRAULIC INTENSIFIER

Shown in use with a 2000-ton press. Designed and built by us complete

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

PLATE, BLOOM AND SLAB SHEARS

FOR cutting sheets or plates where continuous rapid work is desired, and where the cuts exceed 24 inches, the guillotine type of shear is most desirable.

We manufacture geared shears of this type to cut from $\frac{1}{16}$ to 3-inch plates from 24 inches to 160 inches wide; also for cutting hot steel billets and blooms up to 14 x 14 inches, and hot steel slabs 6 x 30 inches.

The general designs of these shears are shown by the following illustrations. The feature of having a pitman to transmit the pressure is retained in all of them.

These shears are built with tight and loose pulleys, or direct-connected engine or electric motor.

ILLUSTRATION NO. 154

⅜ x 24–INCH PLATE SHEAR

Belt driven

Capacity, ⅜ x 24-inch cold soft steel.

Weight, with 6 x 24-inch pulleys, 6000 pounds.

Weight, with 8 x 10-inch engine, 9000 pounds.

Weight, with 10 horse-power electric motor, 9000 pounds.

Gearing, 6-inch face; ratio, 5.5 to 1.

Floor space, 4 x 5 feet.

Speed, 35 cuts per minute when fly-wheel shaft runs 195 revolutions per minute.

Length of knives, 24 inches.

Stroke of head, 3 inches.

This shear is very desirable for cutting skelp and light plates.

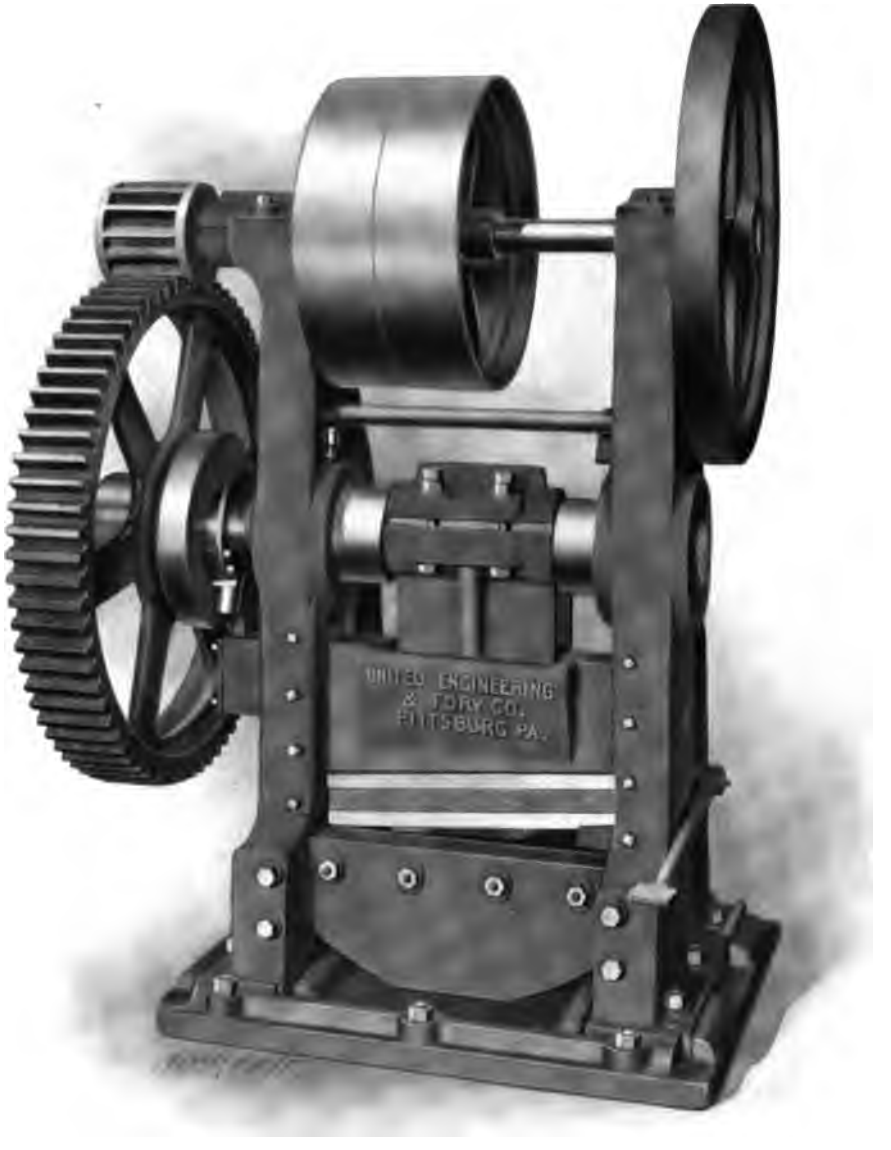


ILLUSTRATION No. 149

1 x 24-INCH PLATE SHEAR

Engine driven

Capacity, 1 x 24-inch cold soft steel plates.

Weight, with 10 x 36-inch pulleys, 20,000 pounds.

Weight, with 8½ x 12-inch engine, 22,000 pounds.

Weight, with 15 horse-power electric motor, 22,000 pounds.

Gearing, 8-inch face; ratio, 7.45 to 1.

Floor space, 8 feet x 6 feet 4 inches.

Speed, 20 cuts per minute when fly-wheel shaft runs 150 revolutions per minute.

Knives, 24 inches long, with four cutting edges.

Stroke of head, 3 inches.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 380

2 x 14-INCH PLATE SHEAR

Motor driven

Capacity, 2 x 14-inch cold soft steel plates.

Weight, with 10 x 36-inch pulleys, 74,000 pounds.

Weight, with 10 x 12-inch engine, 76,000 pounds.

Weight, with 30 horse-power electric motor, 76,000 pounds.

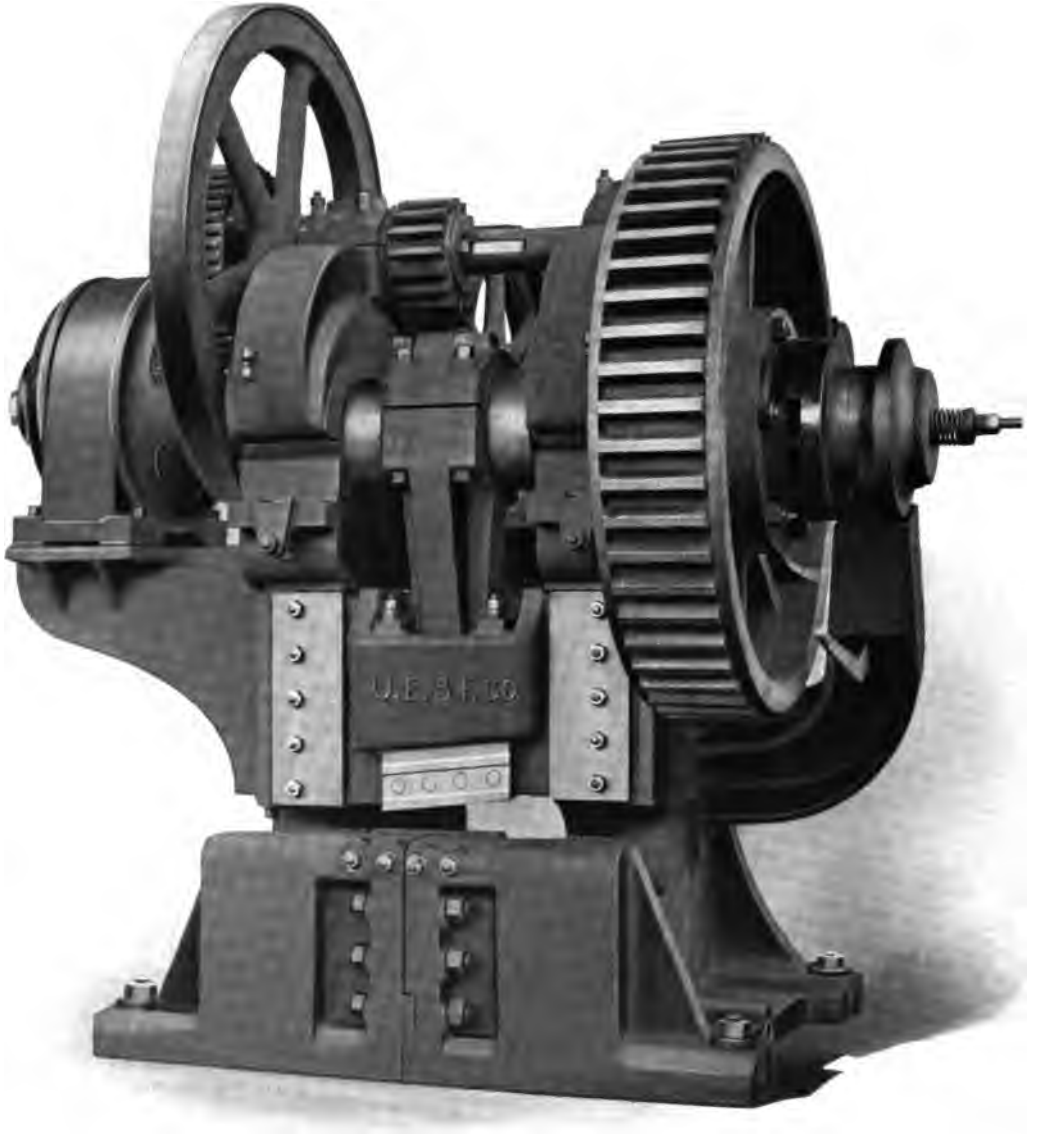
Gearing, 12-inch face; ratio, 14.9 to 1.

Floor space, 8 feet 6 inches x 12 feet.

Speed, 15 cuts per minute when fly-wheel shaft runs 218 revolutions per minute.

Knives, 18 inches long, with four cutting edges.

Stroke of head, 4¼ inches.



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

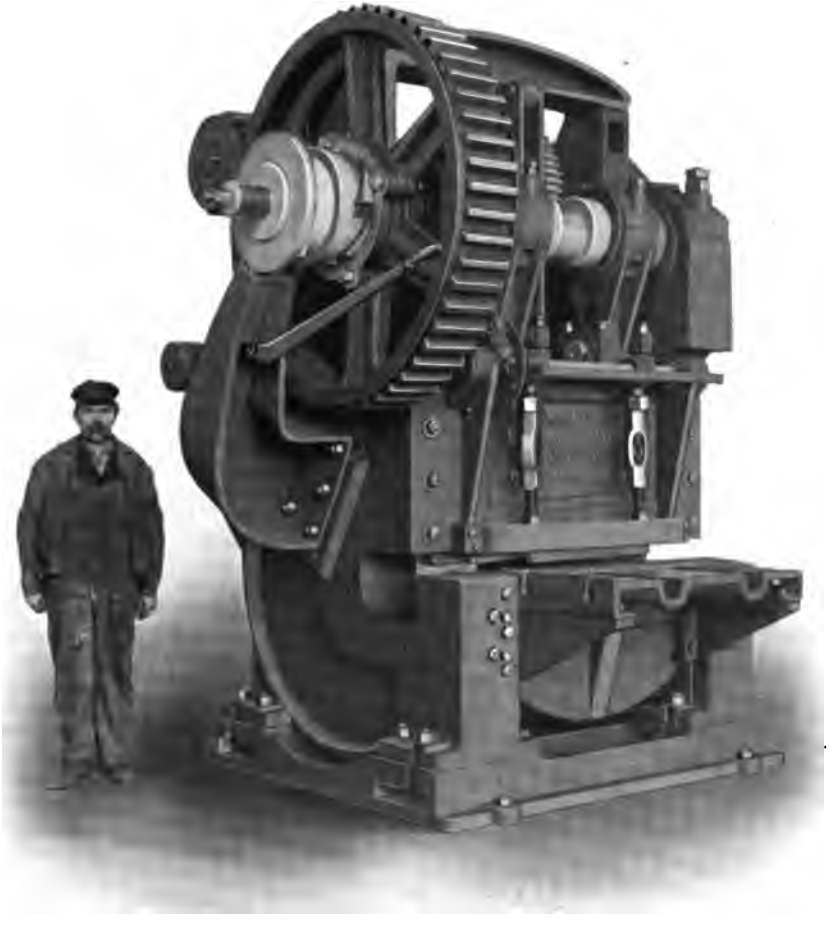


ILLUSTRATION No. 441

42 x 1-INCH PLATE SHEAR

Motor driven

Capacity, 1 x 42-inch cold soft steel plates.

Weight, with 8 x 32-inch pulleys, 42,000 pounds.

Weight, with 9 x 12-inch engine, 46,000 pounds.

Weight, with 20 horse-power electric motor, 46,000 pounds.

Gearing, 9-inch face; ratio, 11 to 1.

Floor space, 10 x 9 feet.

Speed, 20 cuts per minute when fly-wheel shaft runs 220 revolutions per minute.

Knives, 42 inches long, with four cutting edges.

Stroke of head, 4 inches.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

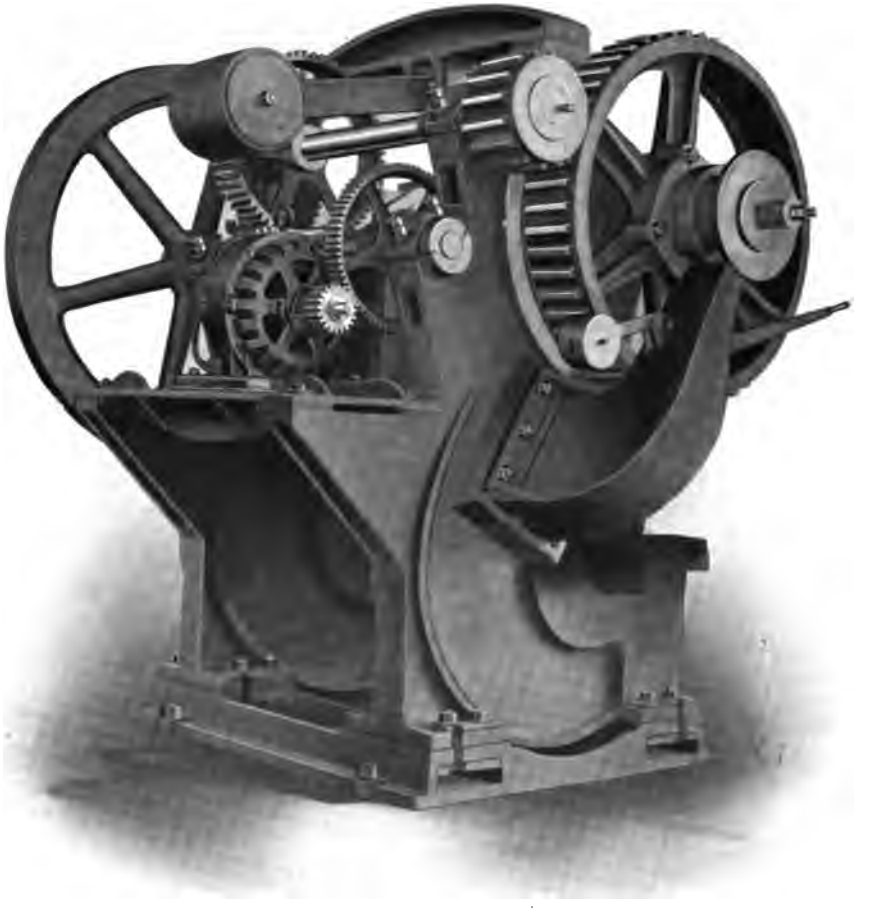


ILLUSTRATION No. 443

42 x 1-INCH PLATE SHEAR—BACK VIEW

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 330

42-INCH PLATE SHEAR

Engine driven

Capacity, 1½ x 42-inch cold soft steel plates.

Weight, with 8½ x 48-inch pulleys, 53,000 pounds.

Weight, with 11 x 12-inch engine, 58,000 pounds.

Weight, with 60 horse-power electric motor, 60,000 pounds.

Gearing, 8-inch face; ratio, 15 to 1.

Floor space, 6 feet x 8 feet 8 inches.

Speed, 15 cuts per minute when fly-wheel shaft runs 225 revolutions per minute.

Knives, 42 inches long, with four cutting edges.

Stroke of head, 4½ inches.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

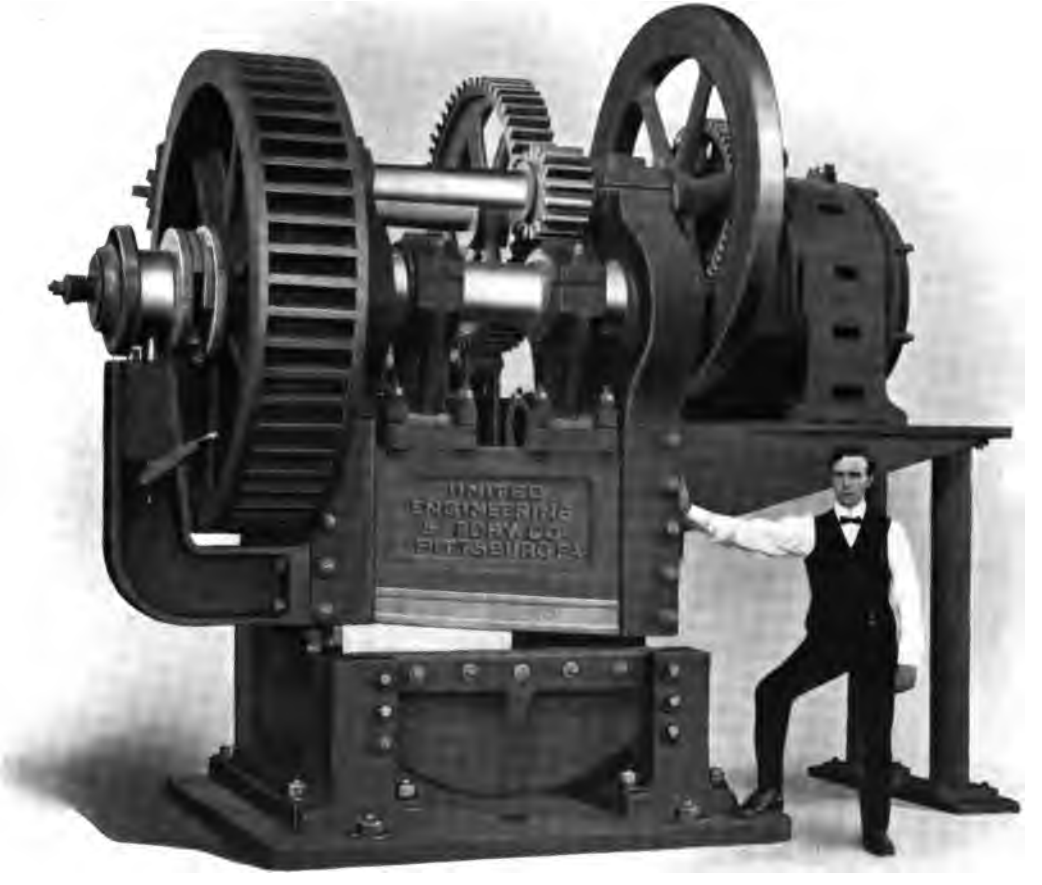


ILLUSTRATION No. 96

42-INCH PLATE SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 424

54-INCH PLATE SHEAR

Motor driven

Capacity, 1¼ x 54-inch cold soft steel plates.

Weight, with 10 x 36-inch pulleys, 73,000 pounds.

Weight, with 14 x 16-inch engine, 75,000 pounds.

Weight, with 75 horse-power electric motor, 75,000 pounds.

Gearing, 12-inch face; ratio, 14.9 to 1.

Floor space, 9 feet 3 inches x 15 feet 3 inches.

Speed, 12 to 18 cuts per minute when fly-wheel shaft runs 179 to 268½ revolutions per minute.

Knives, 54 inches long, with four cutting edges.

Stroke of head, 6 inches.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

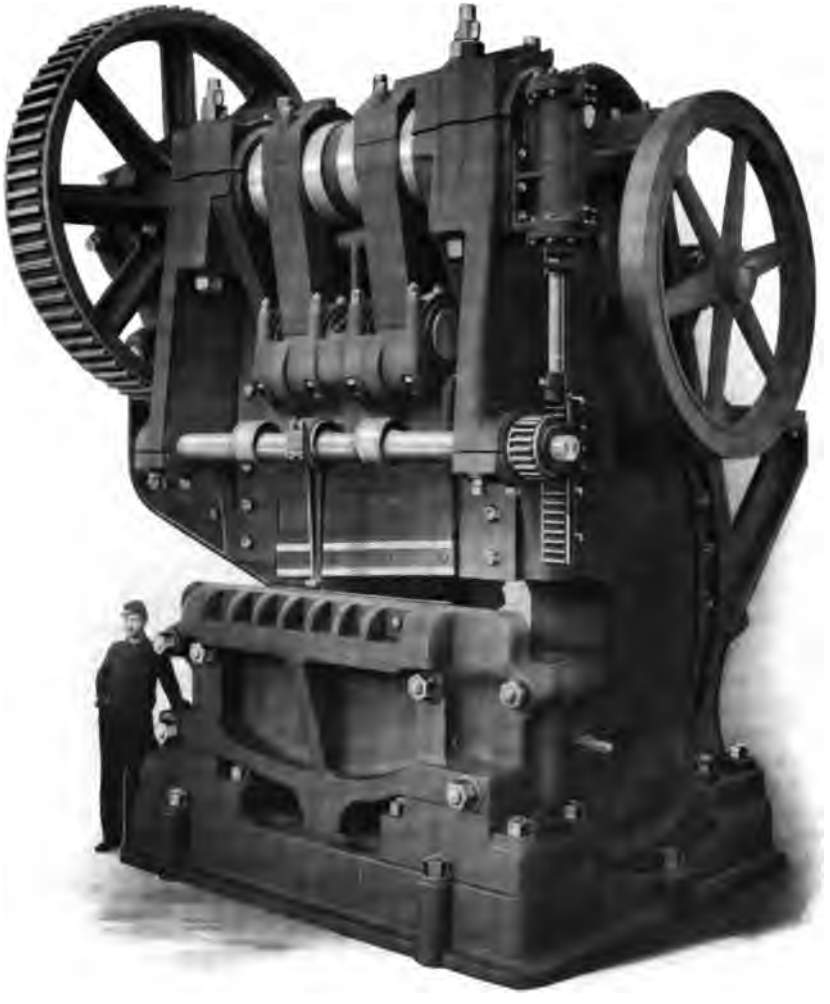


ILLUSTRATION No. 343

60-INCH PLATE SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 397

72-INCH PLATE SHEAR

Motor driven

Capacity, ½ x 72-inch cold soft steel plates.

Weight, with 6 x 30-inch pulleys, 30,000 pounds.

Weight, with 8 x 8-inch engine, 33,000 pounds.

Weight, with 10 horse-power electric motor, 33,000 pounds.

Gearing, 5-inch face; ratio, 9.66 to 1.

Floor space, 8 feet 7 inches x 11 feet 8 inches.

Speed, 20 cuts per minute when fly-wheel shaft runs 193 revolutions per minute.

Knives, 72 inches long, with four cutting edges.

Stroke of head, 5½ inches.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

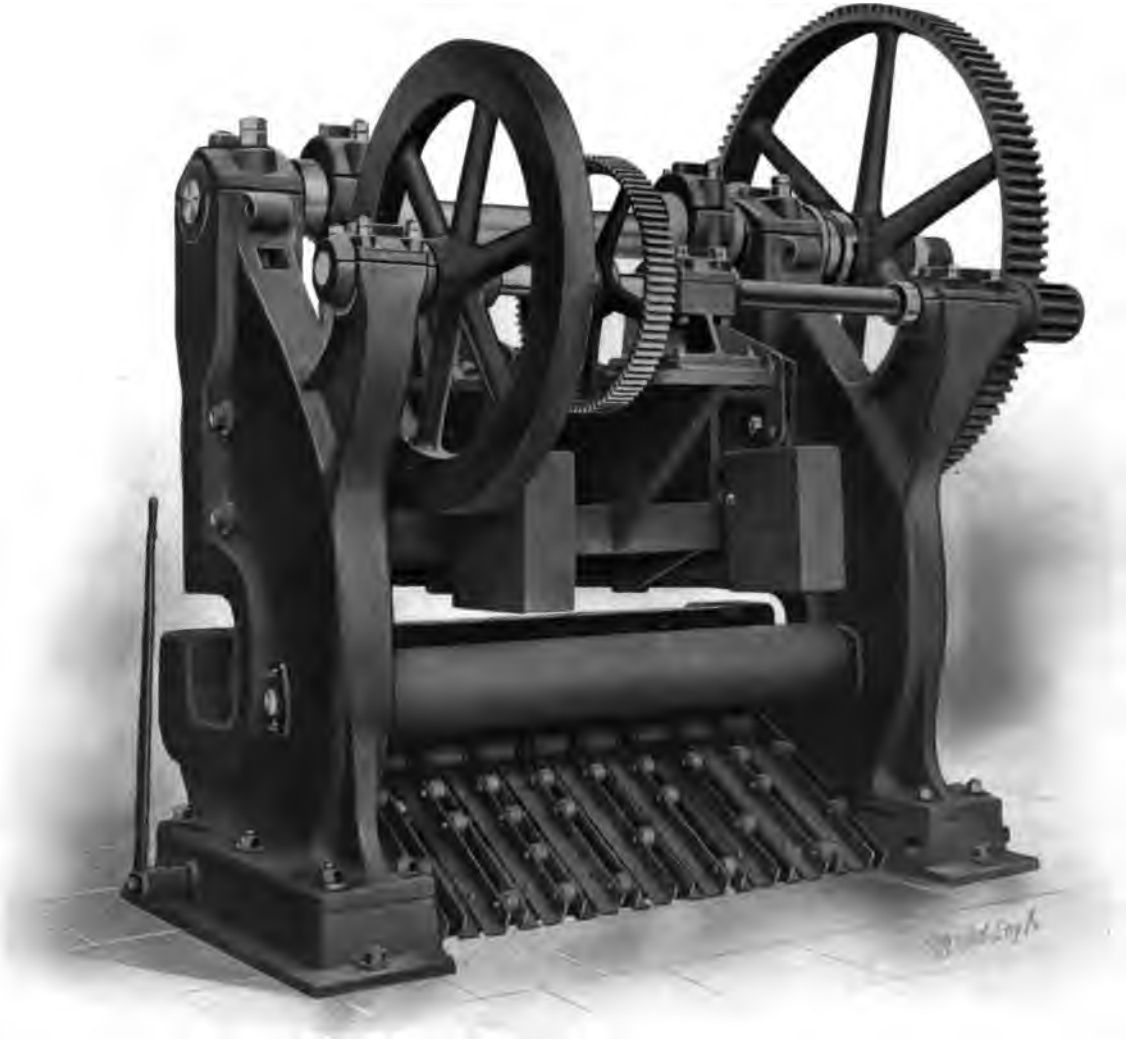


ILLUSTRATION No. 396

72-INCH PLATE SHEAR

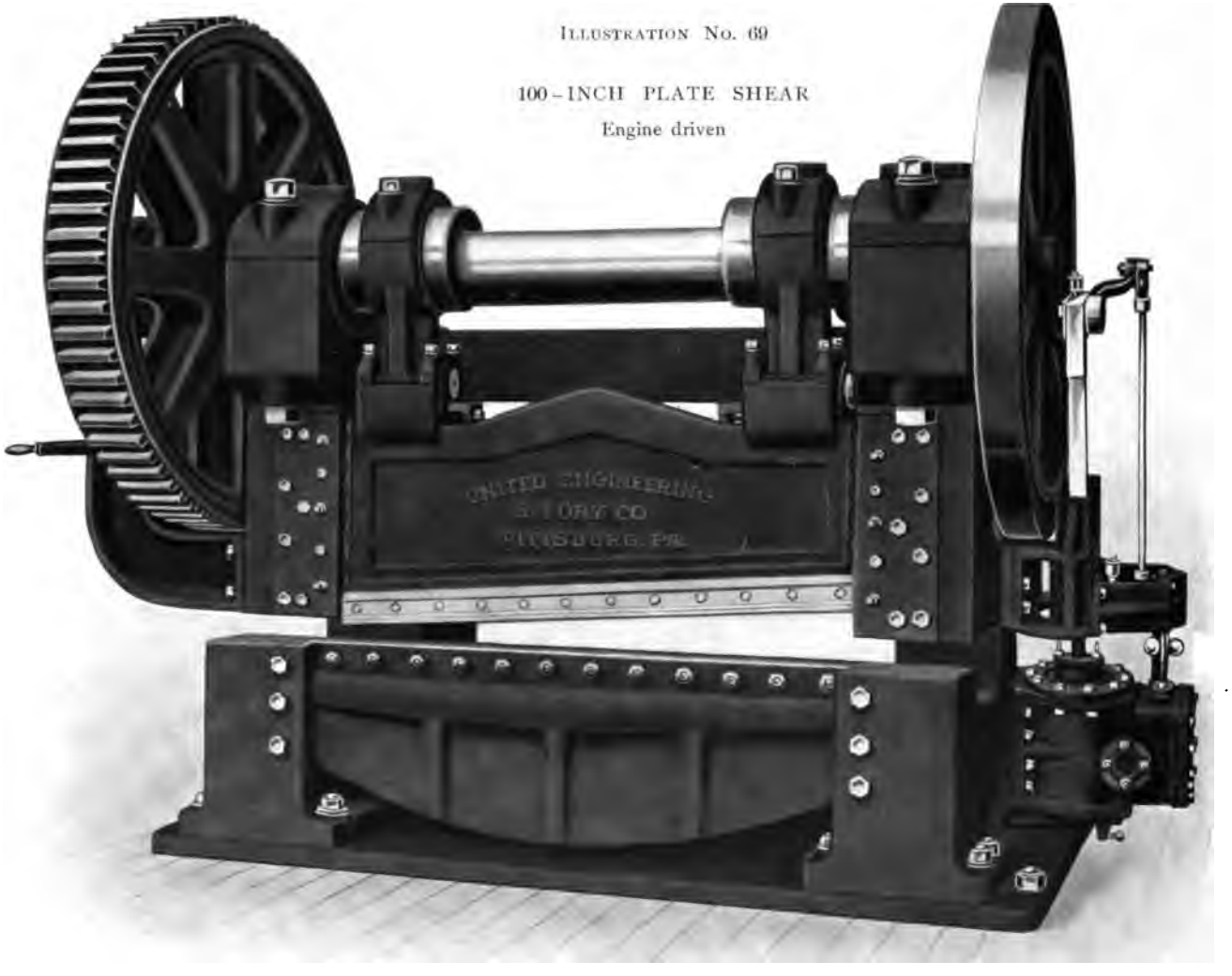
Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 69

100-INCH PLATE SHEAR

Engine driven



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

Capacity, 1¼ x 100-inch cold soft steel plates.
Weight, with 14 x 16-inch engine, 140,000 pounds.
Weight, with 75 horse-power electric motor, 140,000 pounds.
Gearing, 8 and 12-inch face; ratio, 15.6 to 1.

Floor space, 12 feet x 20 feet 3 inches.
Speed, 10 to 12 cuts per minute when fly-wheel shaft runs 156 to 187 revolutions per minute.
Knives, 100 inches long, with four cutting edges.
Stroke of head, 7¾ inches.

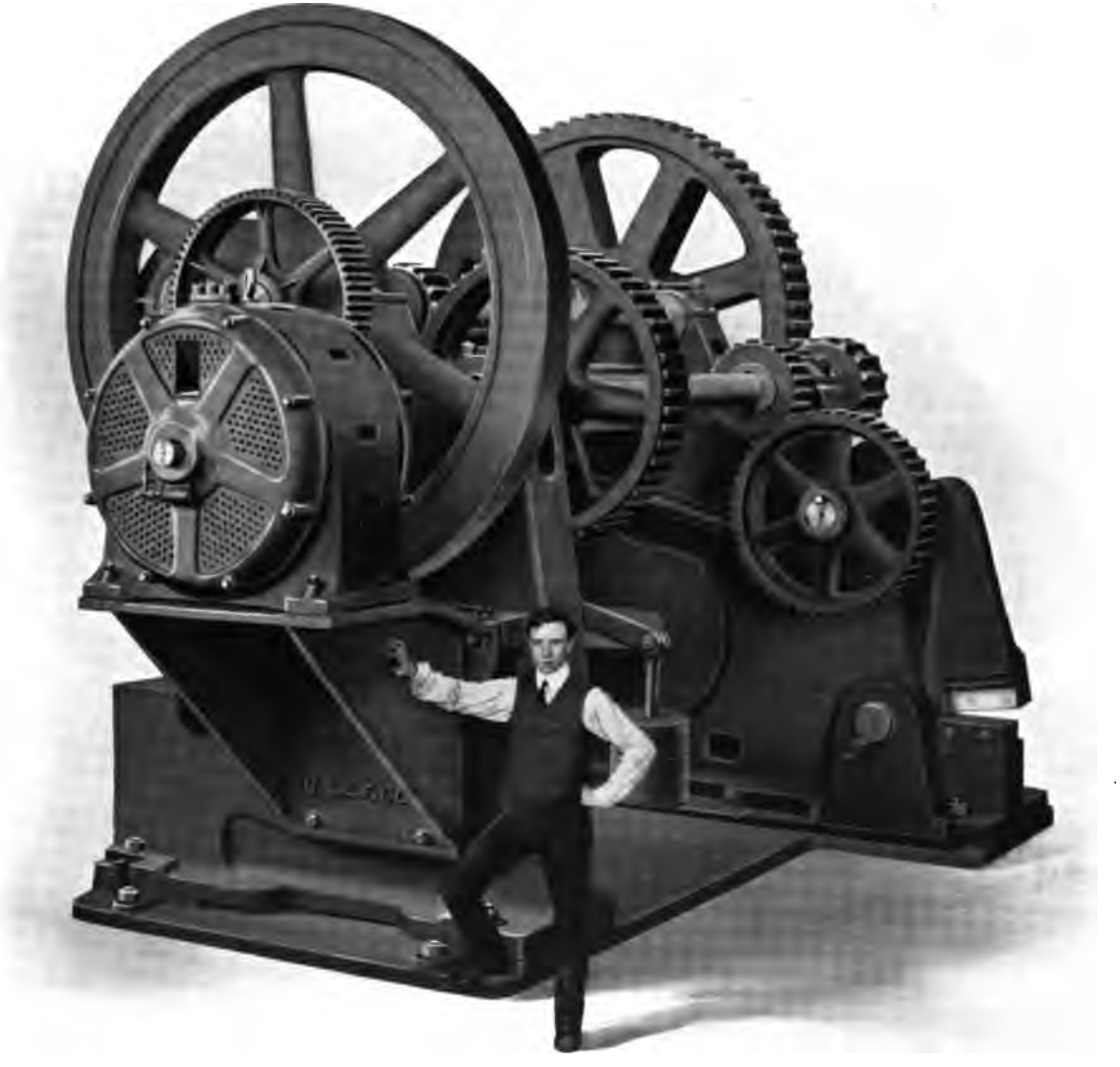
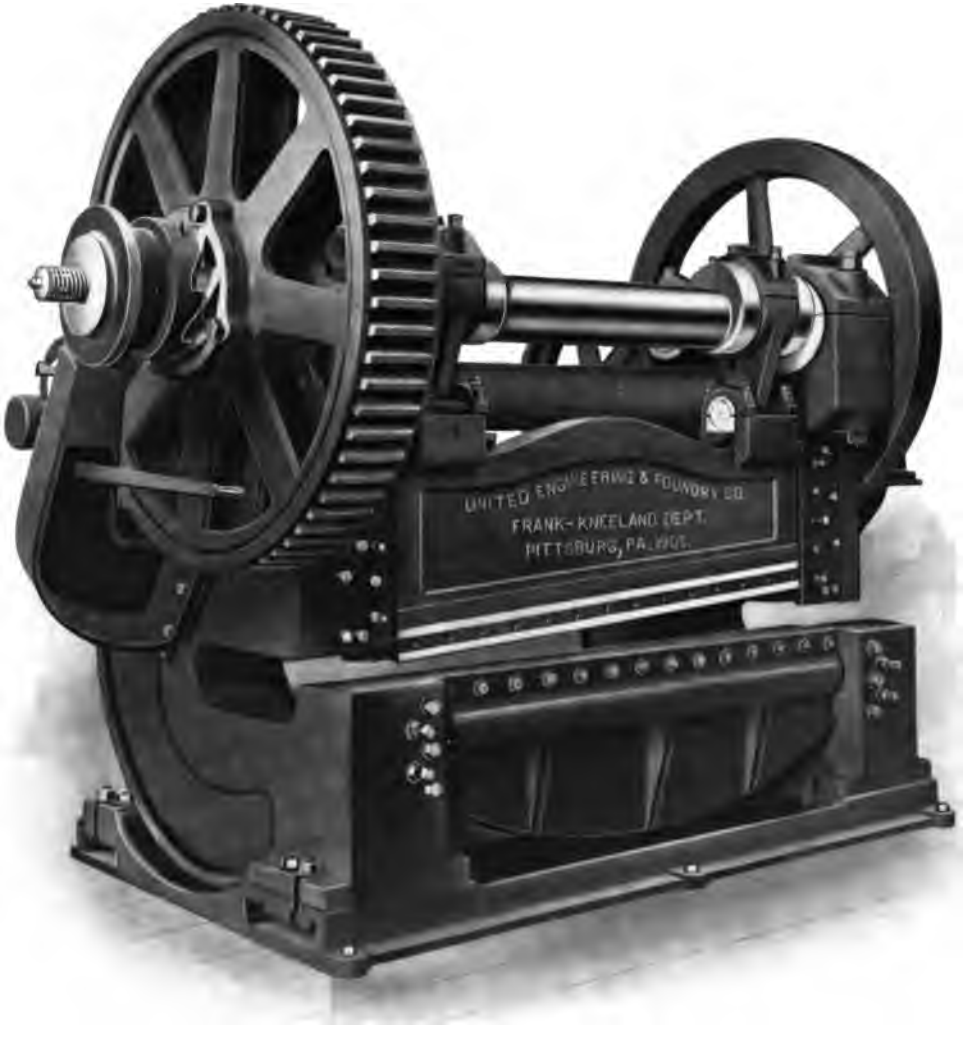


ILLUSTRATION NO. 97

100-INCH PLATE SHEAR WITH SCRAP SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.



UNITED ENGINEERING & FOUNDRY COMPANY
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ILLUSTRATION No. 423

110-INCH PLATE SHEAR

Motor driven

ILLUSTRATION No. 344

132-INCH PLATE SHEAR

Engine driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

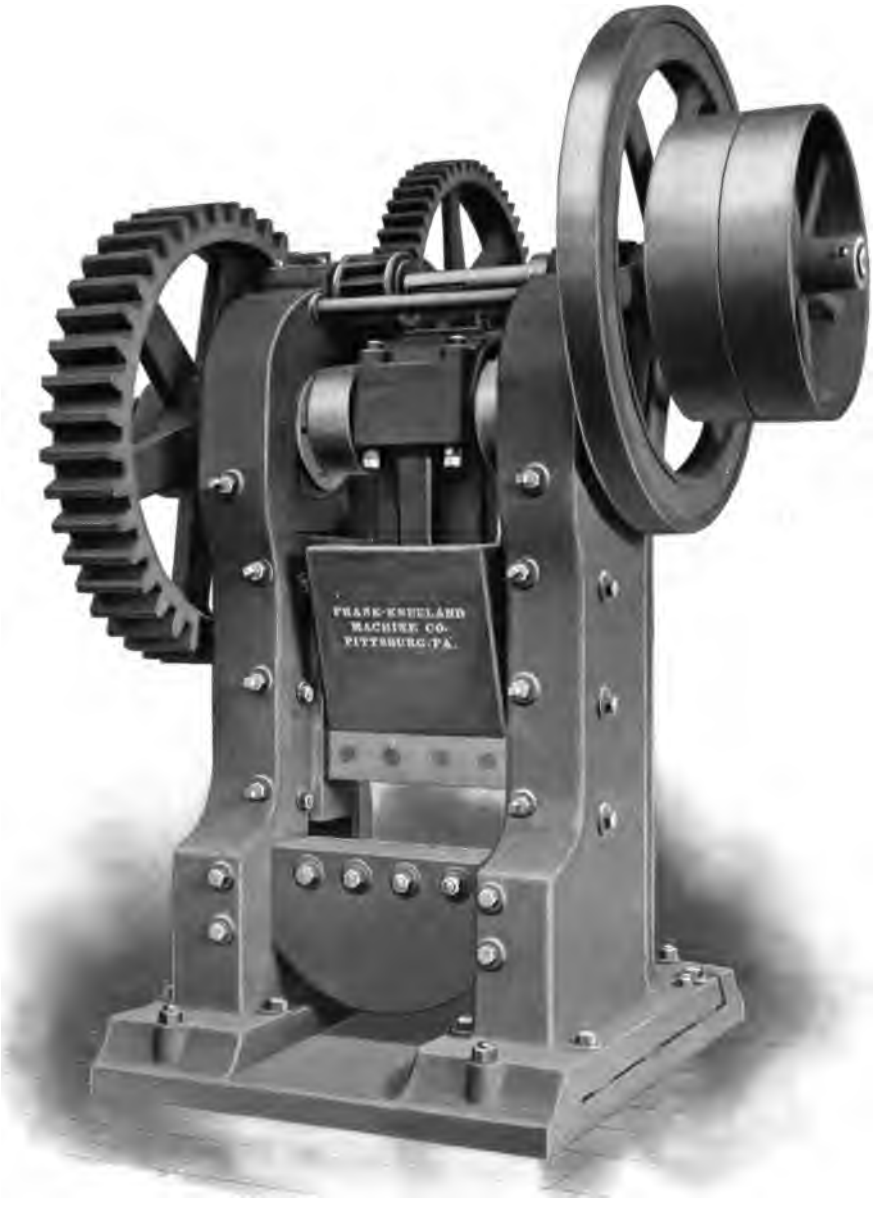

ILLUSTRATION No. 22

6 x 6–INCH BLOOM SHEAR

Belt driven

Capacity, 6 x 6-inch hot soft steel.

Weight, with 8½ x 36-inch pulleys, 36,000 pounds.

Weight, with 11 x 12-inch engine, 40,000 pounds.

Weight, with 30 horse-power electric motor, 41,000 pounds.

Gearing, 6-inch face; ratio, 21 to 1.

Speed, 12 cuts per minute when fly-wheel shaft runs 224 revolutions per minute.

Floor space, 8 feet x 6 feet 6 inches.

Knives, 24 inches long, with four cutting edges.

Stroke of head, 8 inches.

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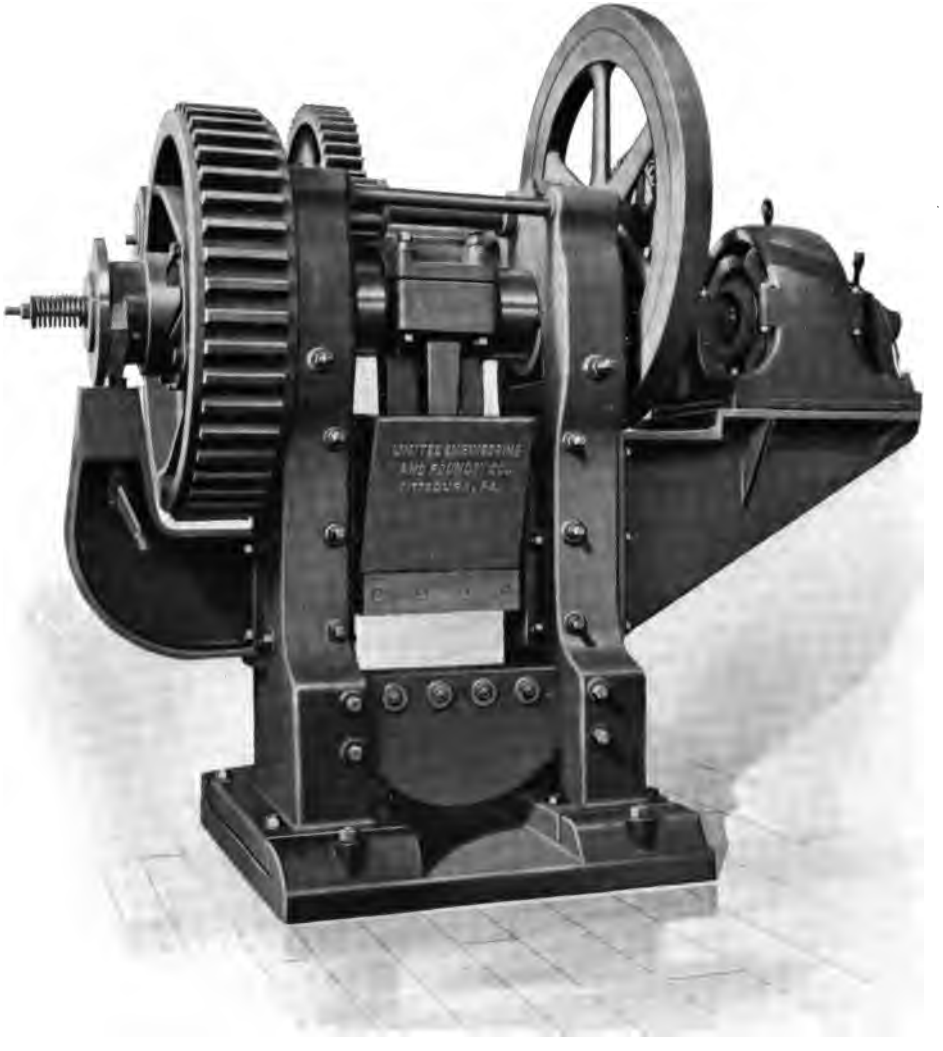

ILLUSTRATION No. 74

6 x 6-INCH BLOOM SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

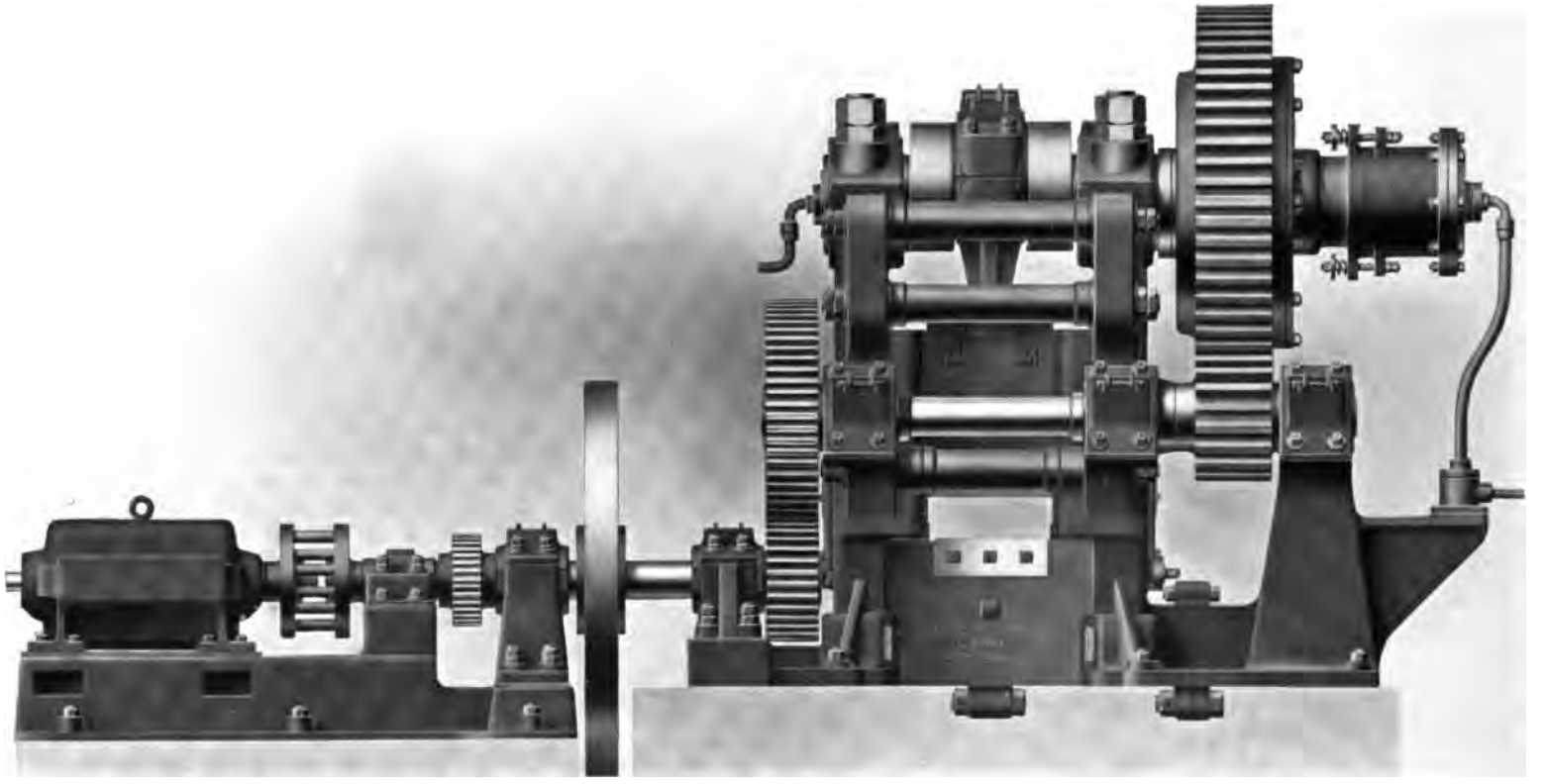

ILLUSTRATION No. 705

8 x 8-INCH HIGH-SPEED HOT BLOOM SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

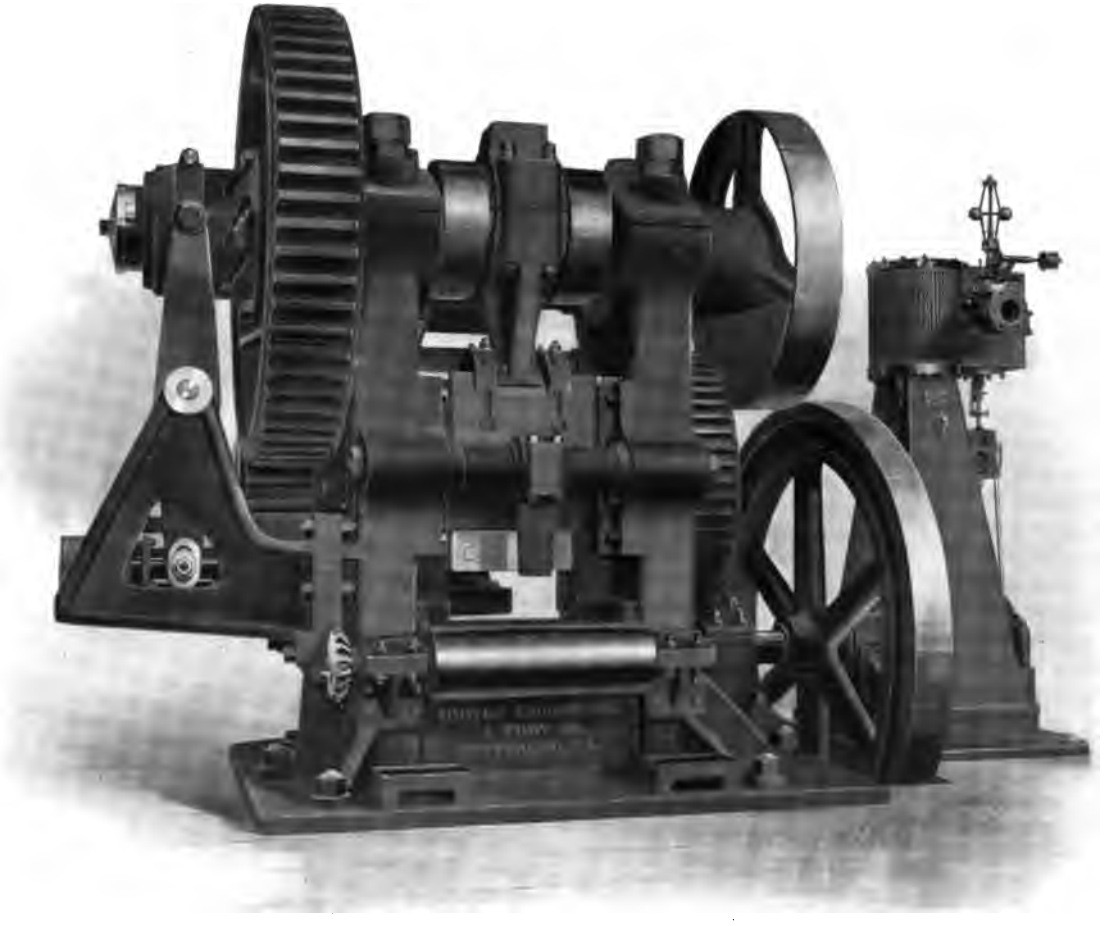

ILLUSTRATION No. 65

10 x 10-INCH HOT BLOOM SHEAR

Engine driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

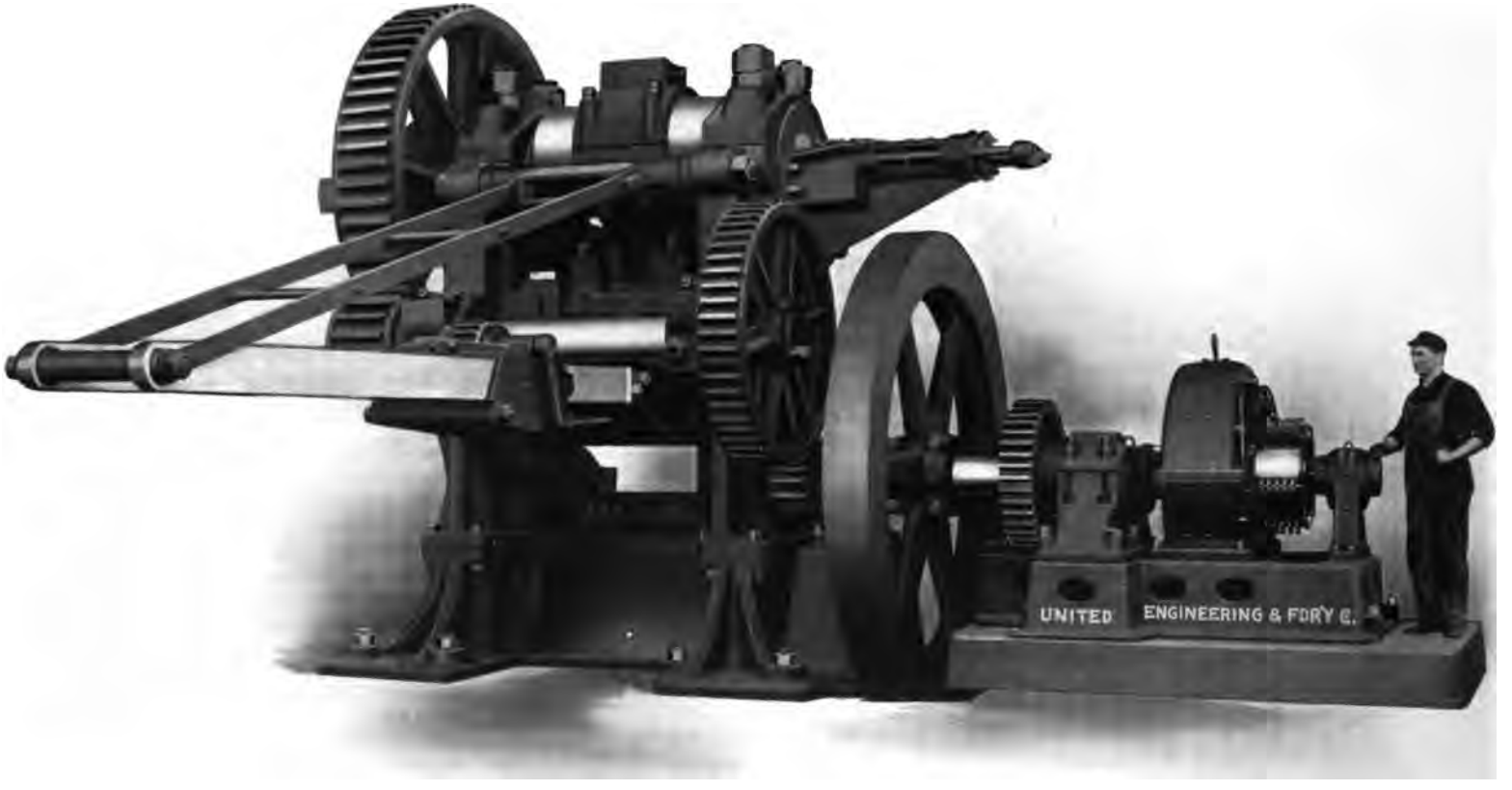

ILLUSTRATION No. 470

6 x 30-INCH HOT SLAB SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

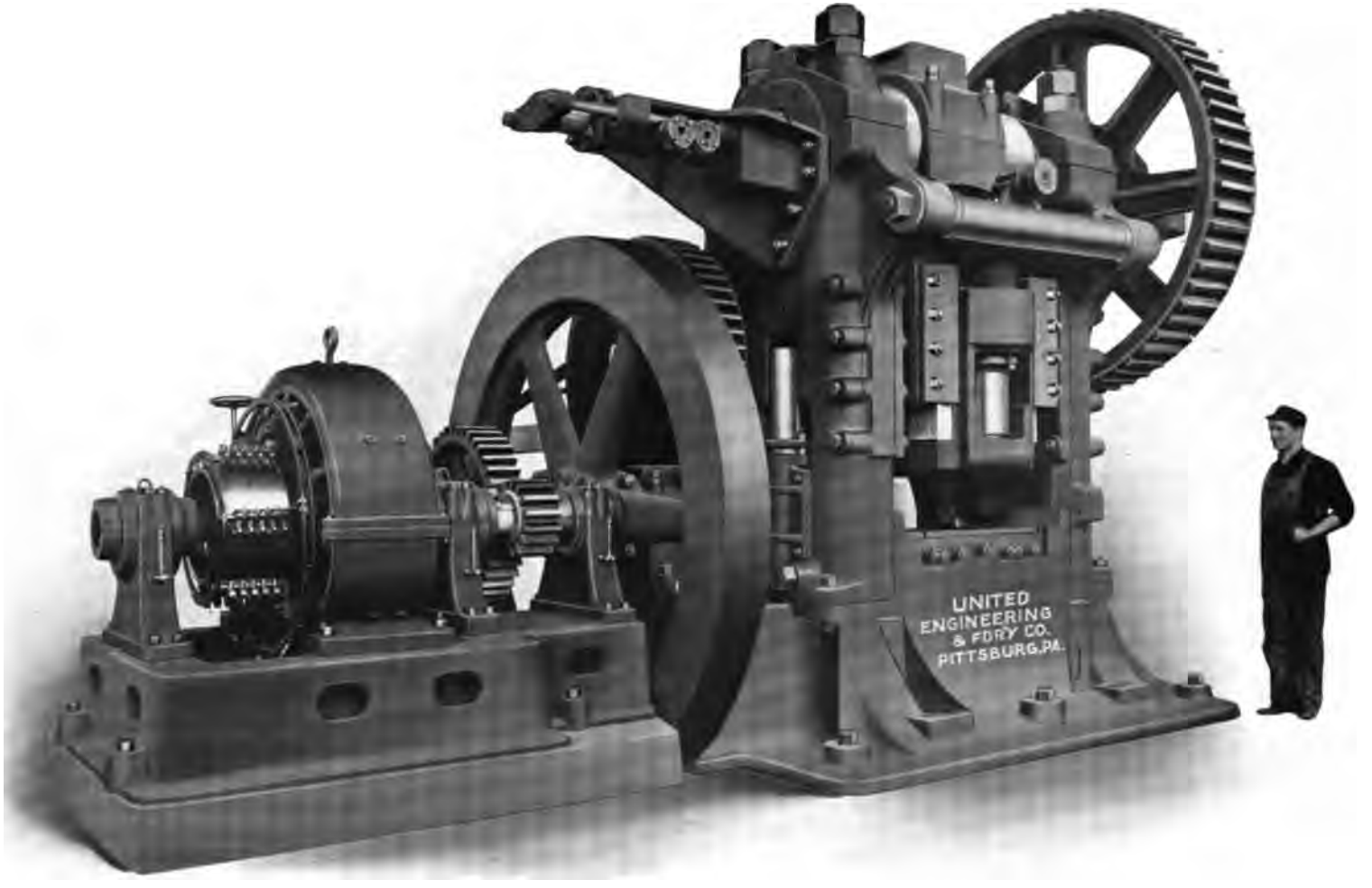

ILLUSTRATION No. 469

6 x 30-INCH HOT SLAB SHEAR

Motor driven

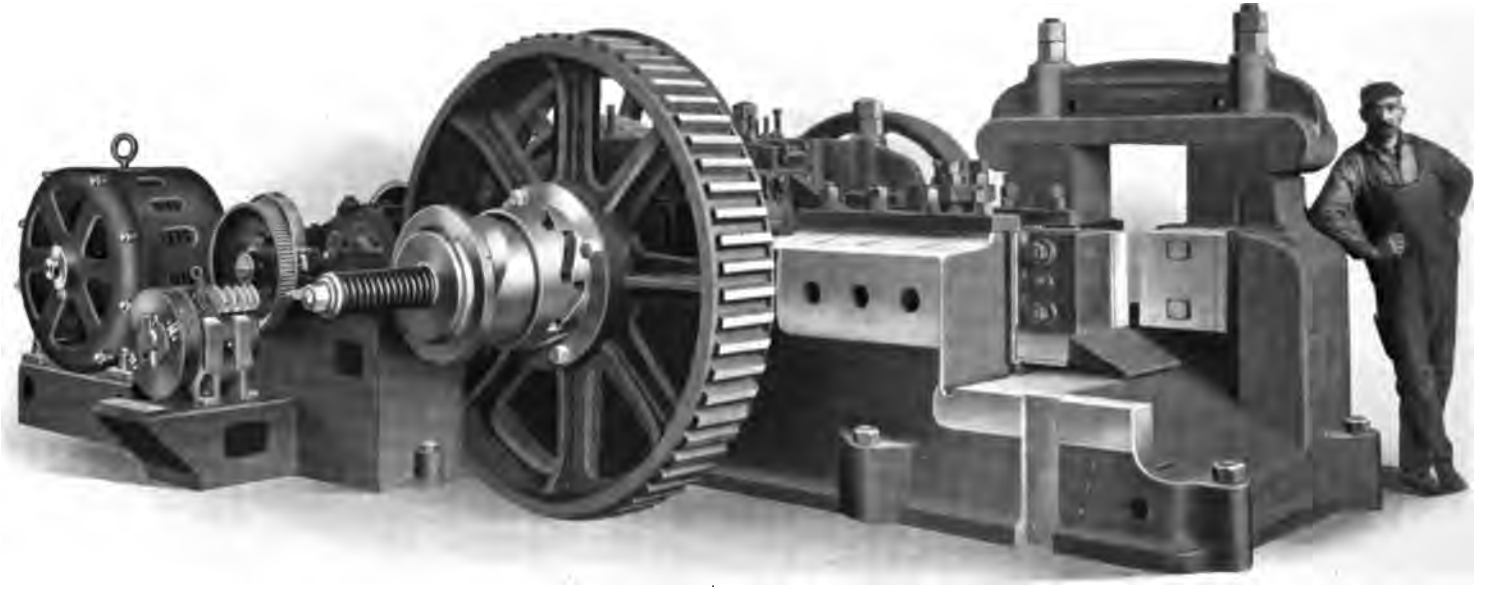

ILLUSTRATION No. 571

10 x 10 – INCH HORIZONTAL HOT BLOOM SHEAR

Motor driven

We also build this shear with capacity to cut 14 x 14-inch hot blooms

UNITED ENGINEERING & FOUNDRY COMPANY
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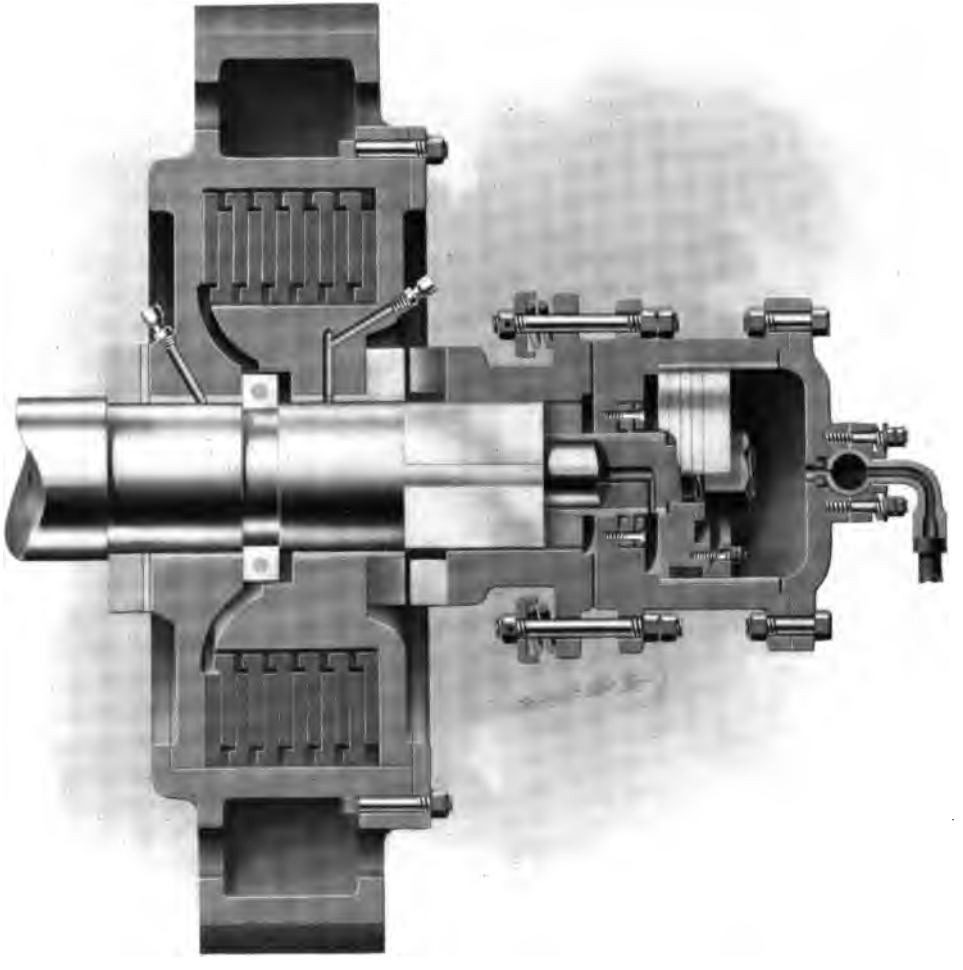

ILLUSTRATION No. 831

FRICTION CLUTCH FOR HIGH-SPEED SHEARS

(Patent pending)

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

TIN PLATE SQUARING SHEARS

THESE machines are made in the following sizes: 36, 48, 54, 72, 126 and 154 inches.

The 36 and 48-inch and one type of the 54-inch shears, shown by Illustrations Nos. 180 and 181, are directly driven without gearing, while the larger sizes are geared. These shears are all equipped with positive stop motion, and the gauges are arranged so that they can be set conveniently.

The larger sizes are equipped with balance weights for the knife head, thus insuring a quiet, easy running machine.

These shears will work equally well on single sheets or packs up to their rated capacity, and we build them with tight and loose pulleys or with direct-connected engine or electric motor.

ILLUSTRATION No. 180

36-INCH SQUARING SHEAR
Belt driven

Capacity, ⅛-inch packs.

Weight, with 8½ x 48-inch band wheel, 6000 pounds.

Speed, 40 cuts per minute.

Floor space, 4 feet x 5 feet 6 inches.

Knives are 36 inches long.

This shear is directly driven without gearing.

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PITTSBURG, PA.

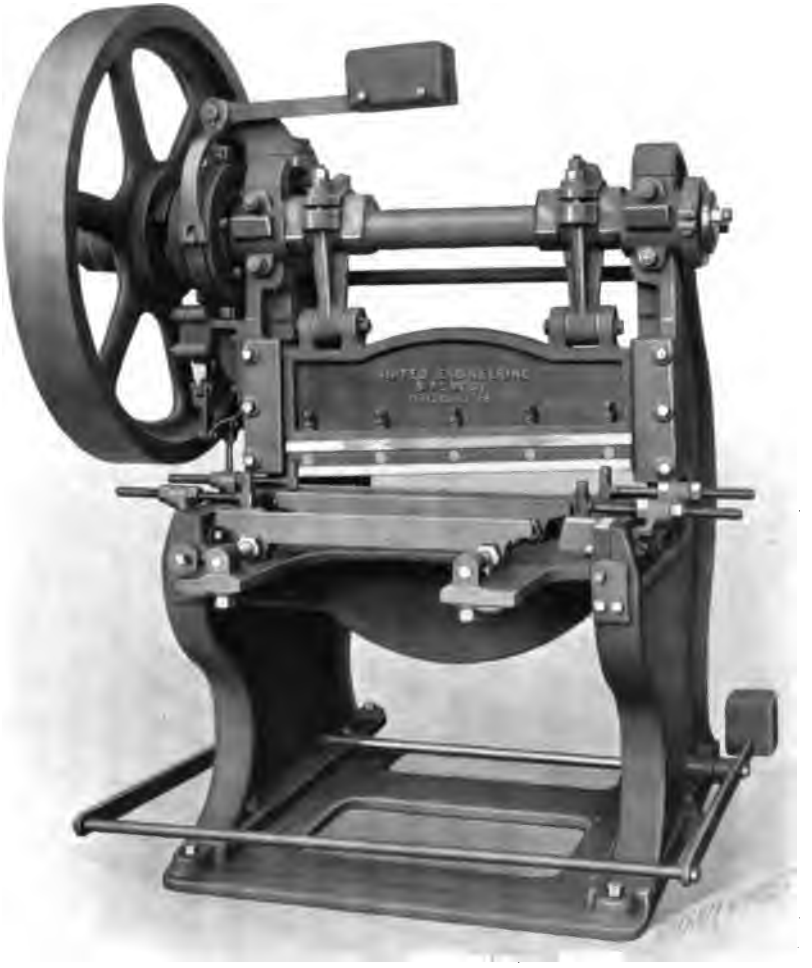

ILLUSTRATION No. 141

B 36-INCH SQUARING SHEAR

Belt driven

Capacity, $\frac{1}{8}$-inch packs.

Weight, with 8½ x 48-inch band wheel, 5500 pounds.

Speed, 40 cuts per minute.

Floor space, 5 feet 6 inches x 5 feet 9 inches.

Knives, 36 inches long.

This shear is directly driven without gearing.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 181

54-INCH SQUARING SHEAR

Belt driven

Capacity, ⅛-inch packs.

Weight, with 8½ x 48-inch band wheel, 7000 pounds.

Speed, 40 cuts per minute.

Floor space, 4 feet x 7 feet 6 inches.

Knives, 54 inches long, with four cutting edges.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

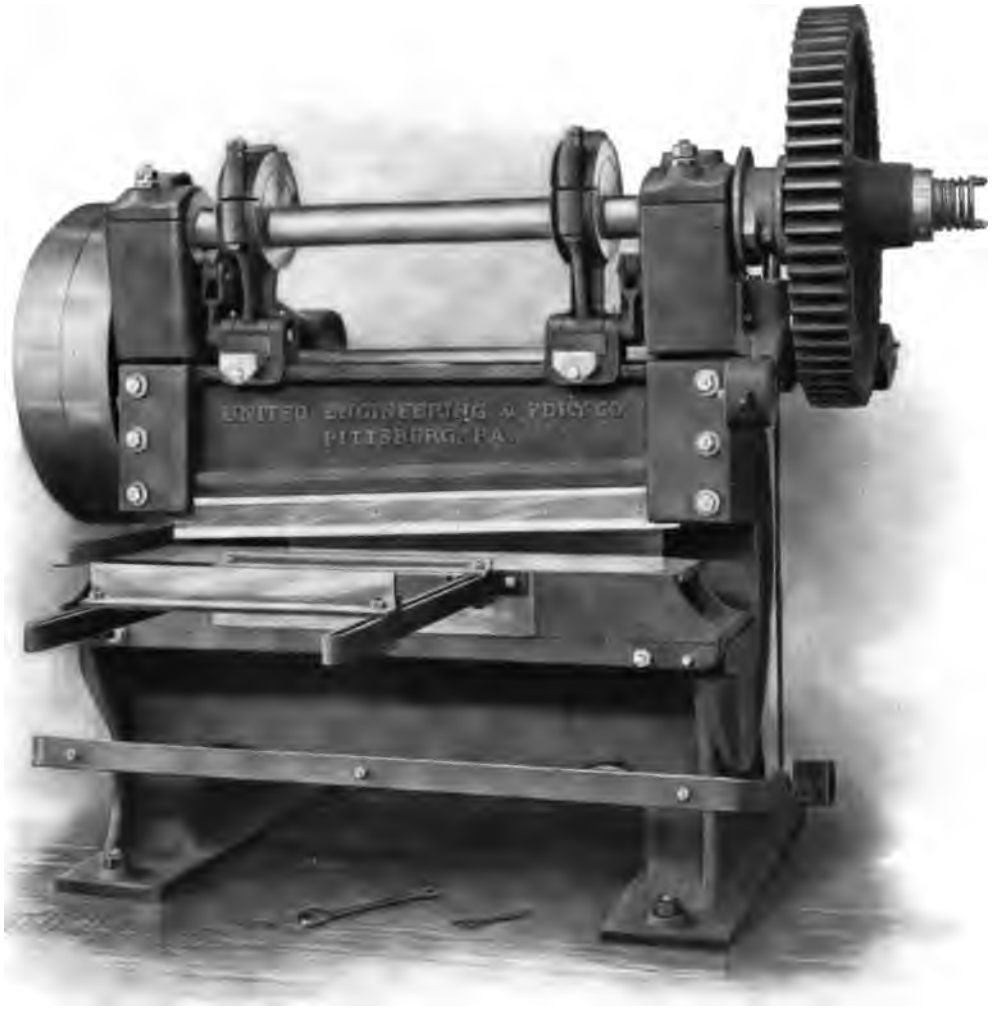

ILLUSTRATION No. 60

54-INCH GEARED SQUARING SHEAR

Belt driven

Capacity, $\frac{3}{16}$-inch packs.

Weight, with 5½ x 36-inch pulleys, 8200 pounds.

Weight, with 7½ horse-power electric motor, 10,400 pounds.

Speed, 30 cuts per minute when fly-wheel shaft runs 190 revolutions per minute.

Floor space, 4 feet x 8 feet 6 inches.

Knives, 54 inches long, with four cutting edges.

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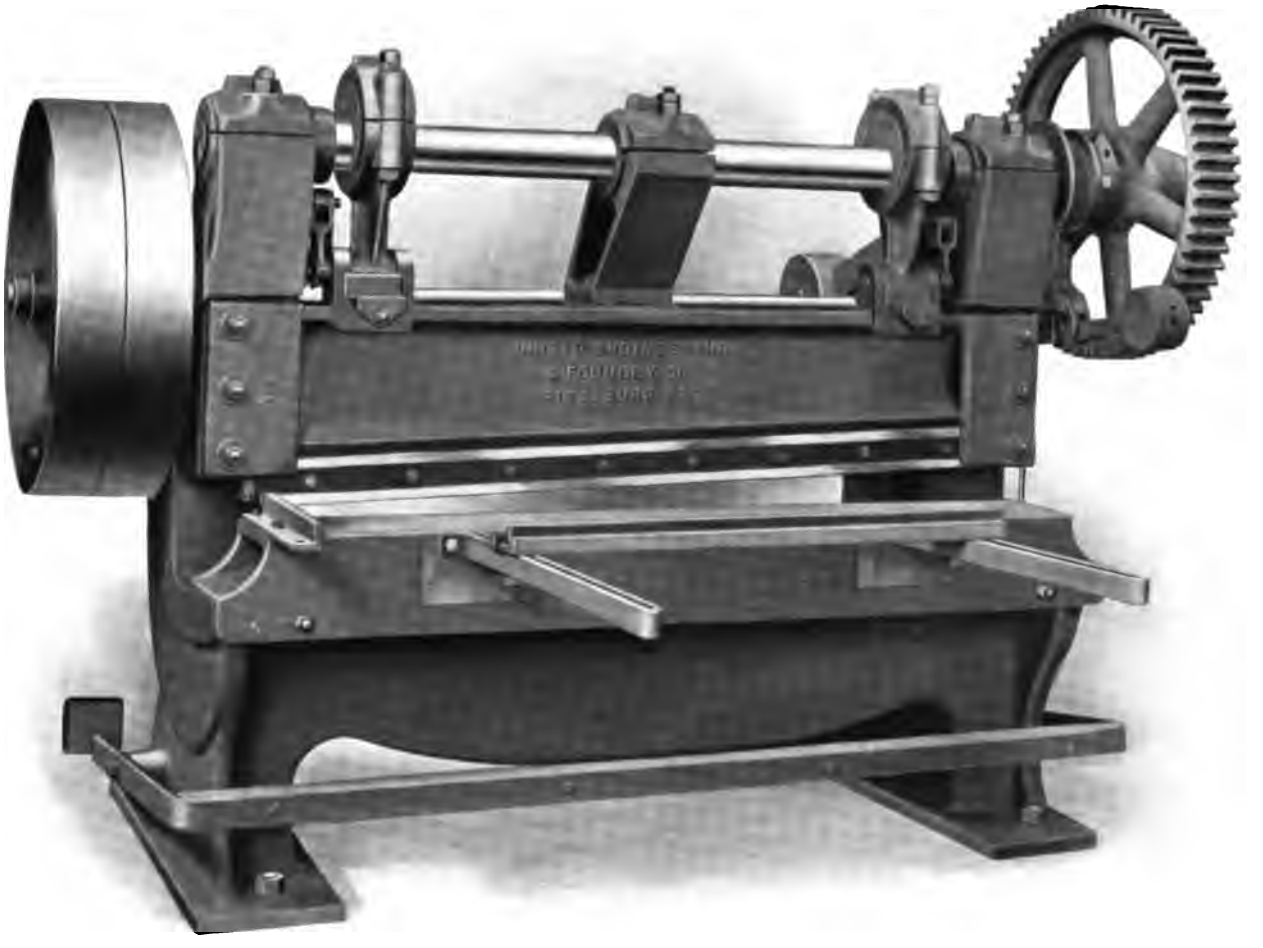

ILLUSTRATION No. 570

72-INCH SQUARING SHEAR

Belt driven

Capacity, $\frac{3}{8}$-inch packs.
Weight, with 5½ x 36-inch pulleys, 10,100 pounds.
Weight, with 7½ horse-power electric motor, 10,750 pounds.
Speed, 30 cuts per minute.
Floor space, 4 x 11 feet.
Knives, 72 inches long, with four cutting edges.

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PITTSBURG, PA.

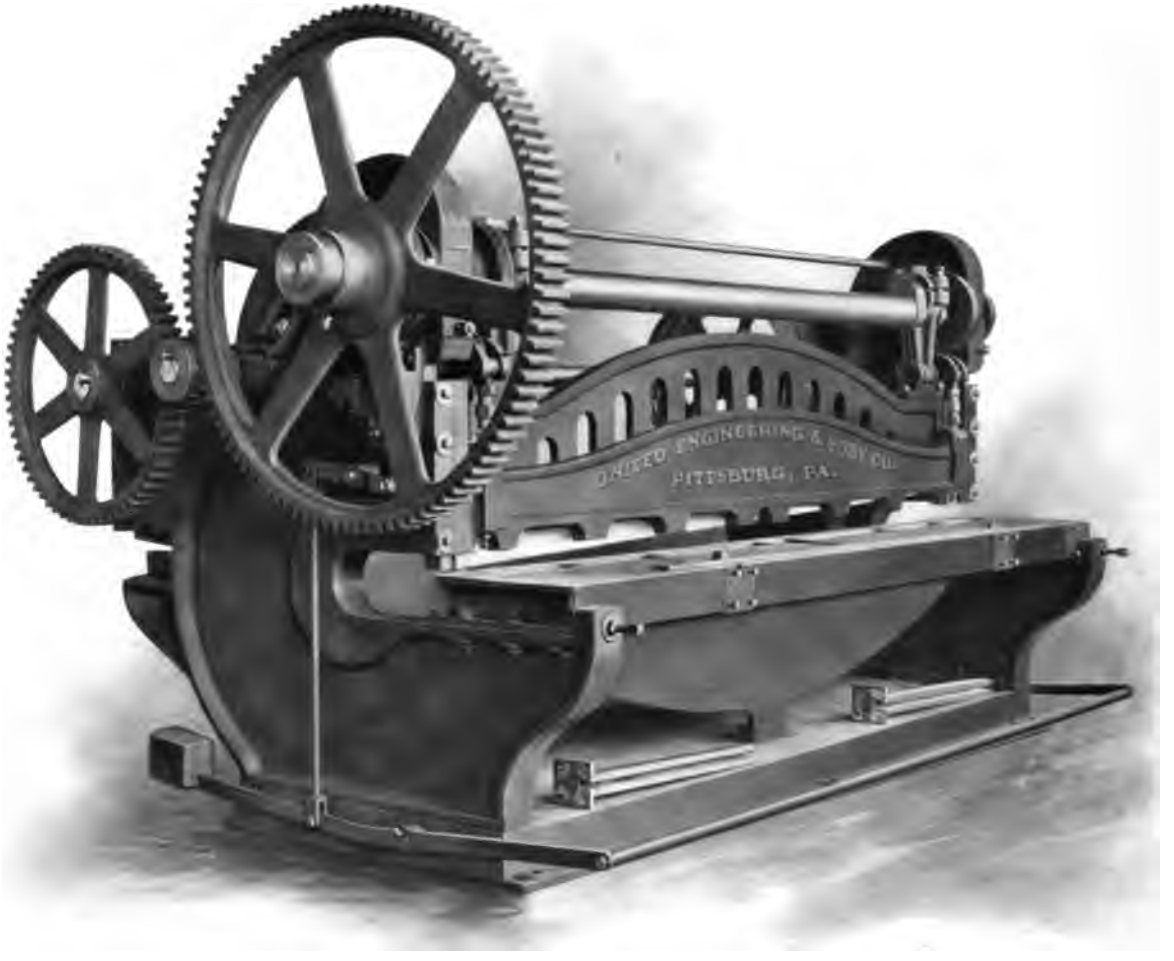

ILLUSTRATION No. 156A

126-INCH SQUARING SHEAR

With scrap shear and hold-down. Belt driven.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

We build several sizes of these shears having capacities ranging from ¼ to ⅜-inch packs.
These shears weigh from 18,000 to 34,000 pounds.
Knives, 126 inches long, with four cutting edges
Speed, about 20 cuts per minute.

All the gears are made very heavy with large ratios.
Some of these shears are built with a scrap shear attached as shown.
See Illustrations Nos. 142, 94 and 426.

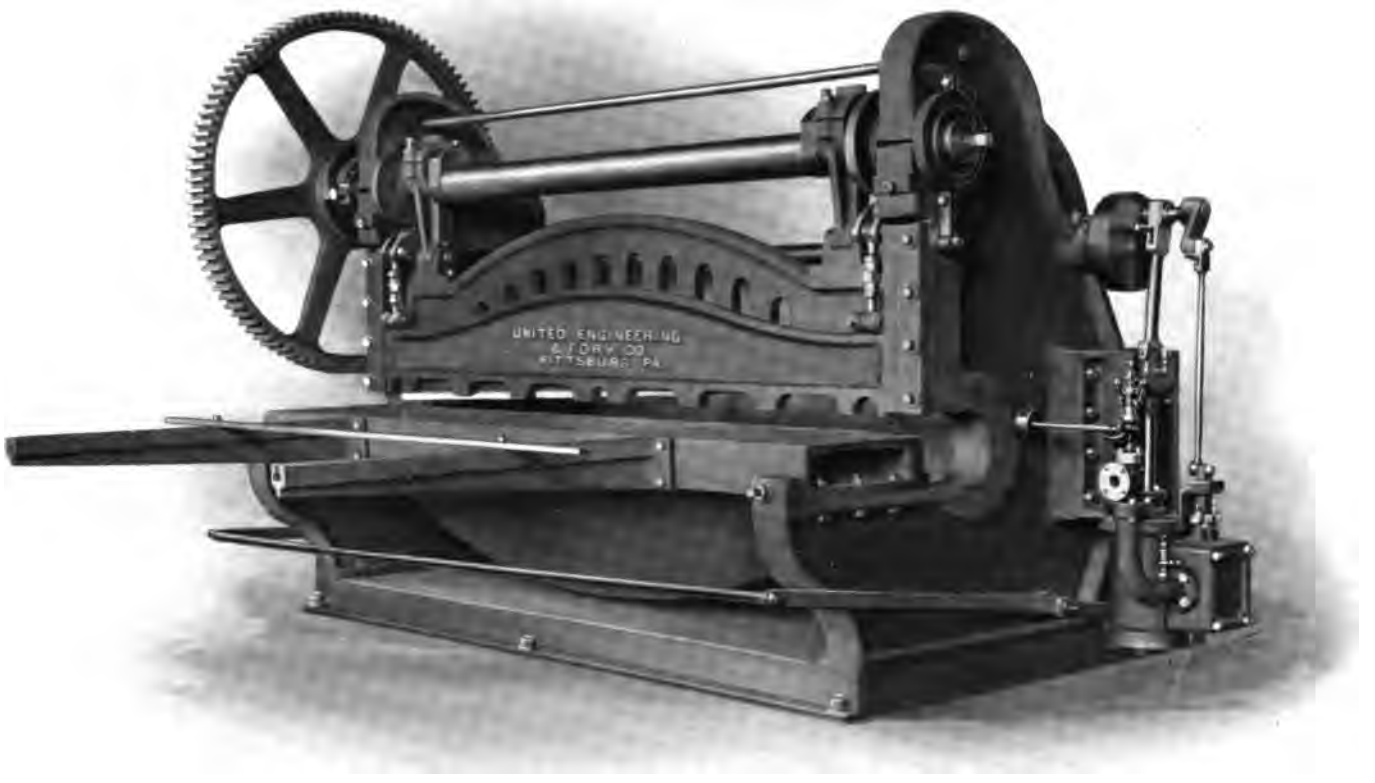

ILLUSTRATION No. 142

126-INCH SQUARING SHEAR

Engine driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

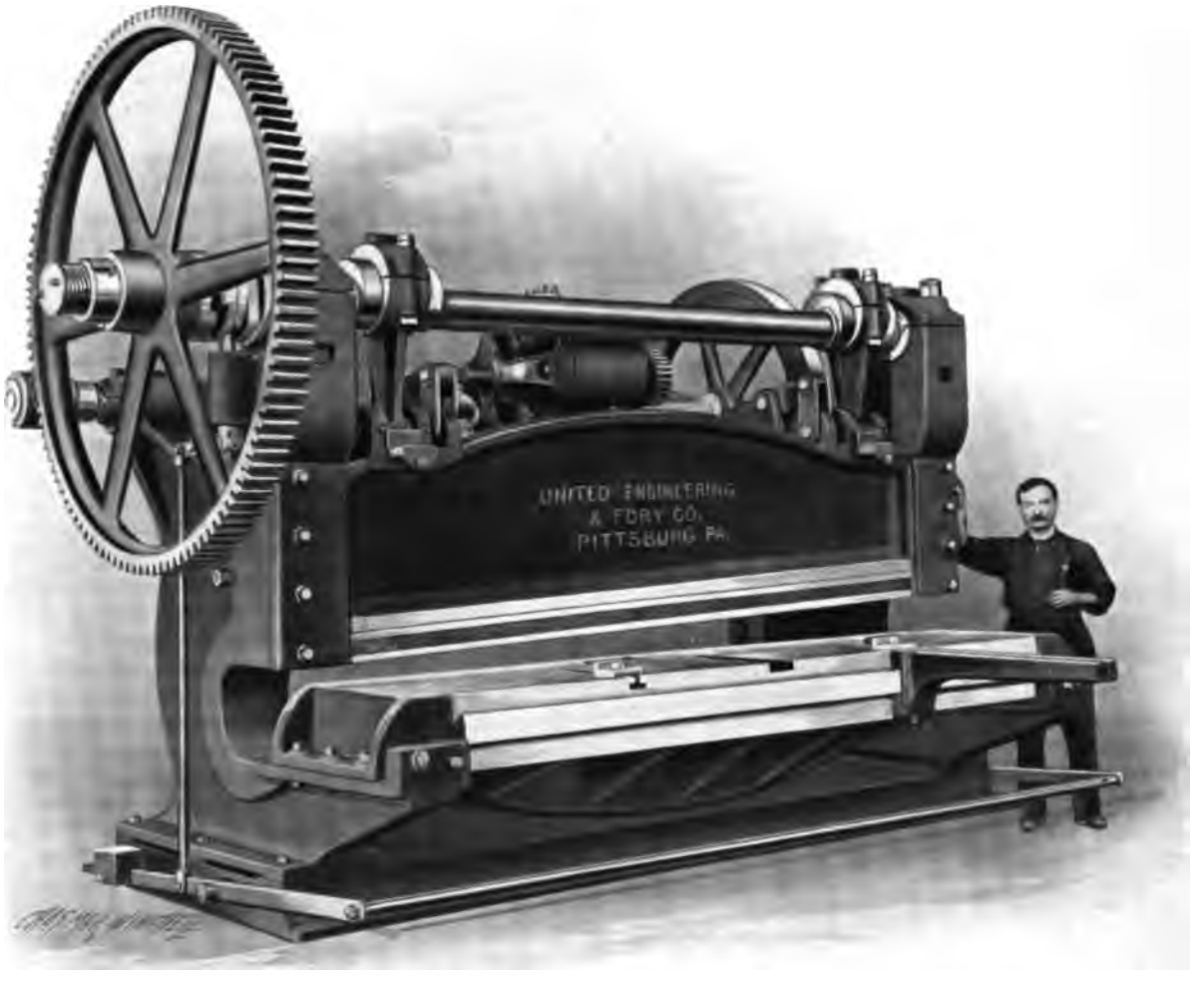

ILLUSTRATION No. 94

126-INCH SQUARING SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

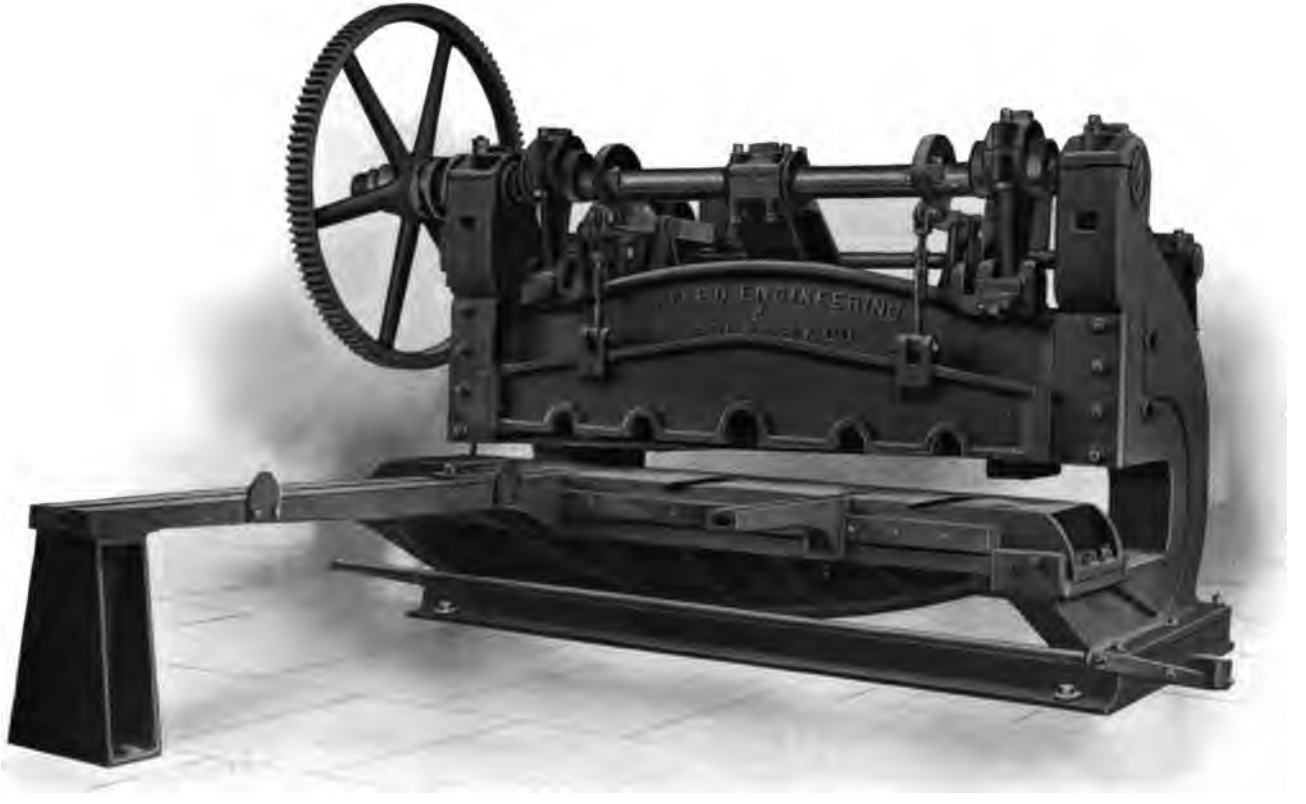

ILLUSTRATION No. 426

126-INCH SQUARING SHEAR—WITH HOLD-DOWN GAG

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

TIN PLATE DOUBLING SHEARS

THESE shears are built with tight and loose pulleys or direct-connected engine or electric motor. They are built right- and left-hand with knives having four cutting edges, from 32 inches to 44 inches long.

Illustration No. 796 shows our 32-inch shear, which is rigid and effective. All parts are adjustable for wear. The usual speed is 30 to 35 cuts per minute.

Floor space, 4 feet x 5 feet 6 inches for the small size, to 5 feet 6 inches x 10 feet 6 inches for the large size.

Weight, with engine, 6800 to 10,500 pounds. Weight, with motor, 7200 to 13,000 pounds.

The body, table, tail piece and outer bearing for the lever are cast in one piece, which makes the machine very rigid and free from springing.

The lever pin is non-rotating, and the lever has bronze bushings and bronze collar for taking up the wear. It also has an adjustable slide at the doubling end. The doubling arm is adjustable for different thicknesses of sheets.

ILLUSTRATION No. 796

TIN PLATE DOUBLING SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

LEVER SHEARS

GENERAL DESCRIPTION OF PITMAN SHEARS

THE lever or crocodile shear, though probably the oldest type, is the most suitable machine for many kinds of shearing. The wide range of work these shears can handle, little necessity of attention, and simplicity of construction, are important factors when general merchant mill or scrap-yard work is to be done; but even in these simple machines the design and workmanship are capable of much variation, and we therefore desire to point out some of the notable features.

In most of our shears the lever is operated by a pitman connecting the crank and lever tail in such a manner as to prevent the possibility of the lever sticking, and reduce friction and wear to a minimum.

The pitman takes a babbitted knuckle bearing in the lever tail, and a pin passes through the lever and pitman to insure the return stroke of the lever. The pitman is operated by a cast-steel crank-shaft which carries the driving wheel on an enlarged wheel fit, the diameter of which is more than twice the crank throw. This enlarged wheel fit is inside the bearings, and gives ample bearing for the wheel, with large leverage for the key, so that there is no danger of breaking at this point.

The main pin is secured to the lever by a feather, and oscillates in the bearings of the housings, where the wear can be taken up by the adjusting wedges. The cutting edges of the knives are central with the bearings, so as to throw equal loads on the bearings and prevent tipping of the lever.

In the cam-connected lever shears, the pitman is replaced by a cam arranged for quick return and sliding on a wearing plate in the tail of the lever. Beyond this there is little difference in the general features of the two types, and although we build large numbers of the cam type, which give good service, we recommend the pitman connection as giving less friction and repairs and greater certainty of operation.

Our ratings for the capacities of all these shears are very conservative, being based on the continuous operation of same.

These shears may be driven by belt power or by direct-connected engine or electric motor, as indicated in the detailed descriptions.

ILLUSTRATION NO. 155

No. B 7 LEVER SHEAR — RIGHT-HAND

Belt driven

Capacity, 1 x 1-inch cold soft steel.

Knives, usually 8 inches long, with four cutting edges.

Speed, 70 to 80 cuts per minute when belt driven.

Pitman connected.

When belt driven, the pulleys are on the crank-shaft and the shear has the following dimensions:

Weight, 3600 pounds.

Floor space, 3 feet 6 inches x 6 feet 3 inches.

Two fly-wheels, 45 inches diameter.

Pulleys, tight and loose, 24 inches diameter x 6½-inch face.

When engine or motor driven, the shear is geared in ratio of 5.27 to 1, the legs are omitted and the engine or motor is connected directly to an extension of the bed.

The engine- and motor-driven shears have the following dimensions:

Speed, 55 to 80 cuts per minute.

Weight, with engine, 4500 pounds; with motor, 4800 pounds.

Floor space, 2 feet 6 inches x 6 feet 3 inches.

Two fly-wheels, 30 inches diameter.

Engine, 5 x 5 inches vertical.

Motor, 5 horse-power.

This shear is designed for high speed and is suitable for use in connection with 7 and 8-inch roll trains, or for cutting small bar and hoop iron.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 9

No. 1 LEVER SHEAR

Capacity, 1¼ x 1¼-inch cold soft steel.

Knives, usually 8 inches long, with four cutting edges.

Speed, 65 to 80 cuts per minute when belt driven.

Pitman connected.

When belt driven, the pulleys are on the crank-shaft and the shear has the following dimensions:

Weight, 5300 pounds.

Floor space, 4 feet x 6 feet 5 inches.

Two fly-wheels, 48 inches diameter.

Pulleys, tight and loose, 30 inches diameter x 6½-inch face.

When engine or motor driven, the shear is geared in ratio of 4 to 1, the legs are omitted and engine or motor is attached to extension of bed, giving the following dimensions:

Speed, 50 to 80 cuts per minute.

Weight, with engine, 5200 pounds; with motor, 5400 pounds.

Floor space, 3 feet 9 inches x 7 feet 9 inches.

One fly-wheel, 38 inches diameter.

Engine, 6 x 6 inches.

Motor, 5 horse-power.

ILLUSTRATION No. 622

Motor driven

ILLUSTRATION No. 155

Belt driven

No. B 6 LEVER SHEAR

Capacity, 1½ x 1½-inch cold soft steel.

Knives, usually 8 to 12 inches long, with four cutting edges.

Speed, 60 to 70 cuts per minute.

Pitman connected.

When belt driven, the gearing is omitted and the shear has the following dimensions:

Weight, 5300 pounds.

Floor space, 4 x 6 feet.

Two fly-wheels, 48 inches diameter.

Pulleys, tight and loose, 36 inches diameter x 6½-inch face.

When engine or motor driven, the shear is geared in ratio of 5½ to 1, the legs are omitted and the shear has the following dimensions:

Weight with engine, 5200 pounds; with motor, 5400 pounds.

Floor space, 2 feet 9 inches x 7 feet 6 inches.

Two fly-wheels, 36 inches diameter.

Engine, 6 x 6 inches.

Motor, 7½ horse-power.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

No. B 5 LEVER SHEAR

Capacity, 1¾ x 1¾ inches, or 5 x 1-inch cold soft steel.

Weight with 5 x 36-inch pulley, 10,300 pounds.

Weight with 8 x 10-inch engine, 12,000 pounds.

Weight with 10 horse-power electric motor, 13,400 pounds.

Floor space, 5 feet 3 inches x 8 feet 9 inches, with short knife.

Speed, 35 cuts per minute when fly-wheel shaft runs 181 revolutions per minute.

Gearing, 6-inch face; ratio, 5.17 to 1.

This shear is used largely for busheling light scrap, and is usually equipped with knives 24 inches long for cutting sheets, boiler stacks, etc.; in this case the lever is cast-steel.

ILLUSTRATION No. 139 A

Belt driven

ILLUSTRATION No. 562

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 110

Belt driven

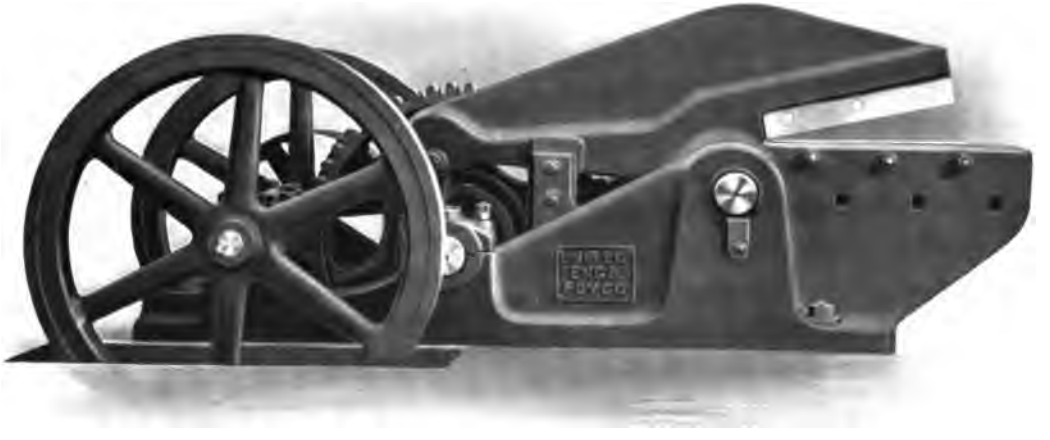

ILLUSTRATION No. 567

Belt driven

No. 2 LEVER SHEAR

Capacity, 2 x 2-inch or 1 x 6-inch cold soft steel.

Weight, with 6½ x 30-inch pulleys, 10,000 pounds.

Weight, with 9 x 9-inch engine, 12,000 pounds.

Weight, with 12½ horse-power electric motor, 12,700 pounds.

Floor space, 5 feet x 8 feet 6 inches, belt driven.

Speed, 30 cuts per minute when fly-wheel shaft runs 150 revolutions.

Gearing, 6-inch face; ratio, 5 to 1.

This shear is largely used in connection with 10 or 12-inch roll trains and is also arranged with high knife for busheling scrap (see Illustration No. 567).

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

ILLUSTRATION No. 63

No. 2 LEVER SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 113

No. 3 LEVER SHEAR

Engine driven

Capacity, 2¼ x 2¼-inch or 1 x 7-inch cold soft steel.
Weight, with 8 x 32-inch pulleys, 14,000 pounds.
Weight, with 10 x 10-inch engine, 16,500 pounds.
Weight, with 15 horse-power electric motor, 17,000 pounds.
Floor space, 7 feet 10 inches x 11 feet, belt driven.

Speed, 25 cuts per minute when fly-wheel shaft runs 175 revolutions per minute.
Gearing, 6-inch face; ratio, 7 to 1.
This shear is built with crank and pitman.
This shear is largely used for cutting muck or sheet bars.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 136

No. B 4 LEVER SHEAR

Engine driven

Capacity, 2½ x 2½-inch or 1 x 7-inch cold soft steel.
Weight, with 8 x 36-inch pulleys, 14,500 pounds.
Weight, with 8½ x 12-inch engine, 17,000 pounds.
Weight, with 15 horse-power electric motor, 17,000 pounds.
Floor space, 5 feet 9 inches x 10 feet, belt driven.
Speed, 25 cuts per minute when fly-wheel shaft runs 164 revolutions per minute.
Gearing has 6-inch face; ratio, 6.54 to 1.
This shear is made with crank and pitman.
This shear is used largely for cutting muck or sheet bars.

ILLUSTRATION No. 734

No. 4 LEVER SHEAR

Engine driven

Capacity, 2¾ x 2¾-inch or 1½ x 8-inch cold soft steel.
Weight, with 8 x 38-inch pulleys, 22,000 pounds.
Weight, with 10 x 10-inch engine, 24,500 pounds.
Weight, with 20 horse-power electric motor, 24,500 pounds.
Floor space, 6 feet 4 inches x 11 feet 6 inches, belt driven.
Speed, 20 cuts per minute when fly-wheel shaft runs 130 revolutions per minute.
Gearing, 8-inch face; ratio, 6.54 to 1.
This shear is used in connection with 16 and 18-inch roll trains.

UNITED ENGINEERING & FOUNDRY COMPANY, PITTSBURG, PA.

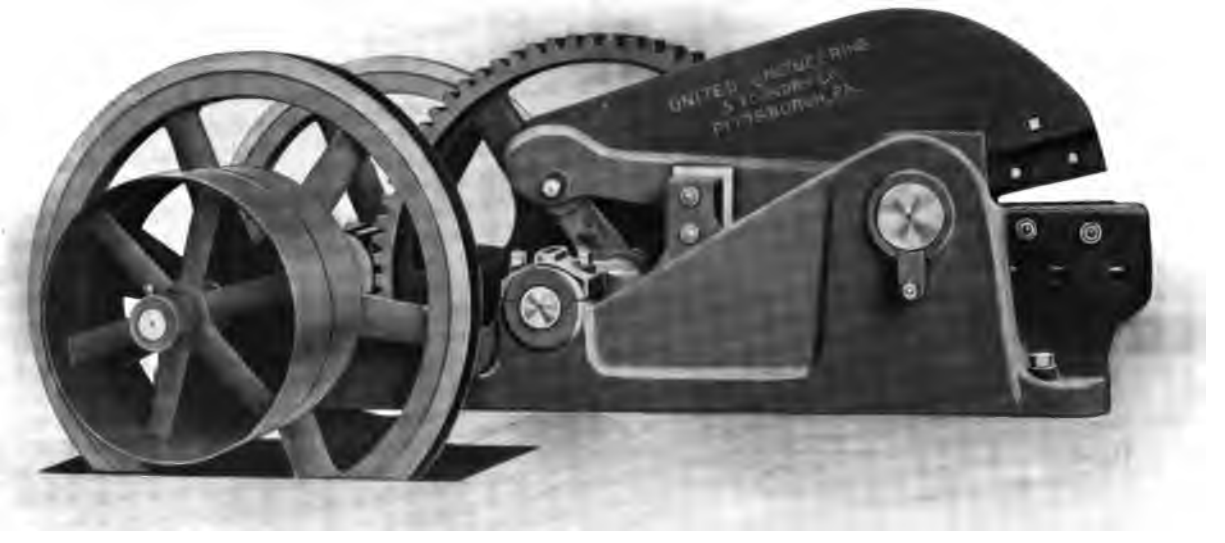

ILLUSTRATION NO. 412

NO. 4 LEVER SHEAR

Belt driven

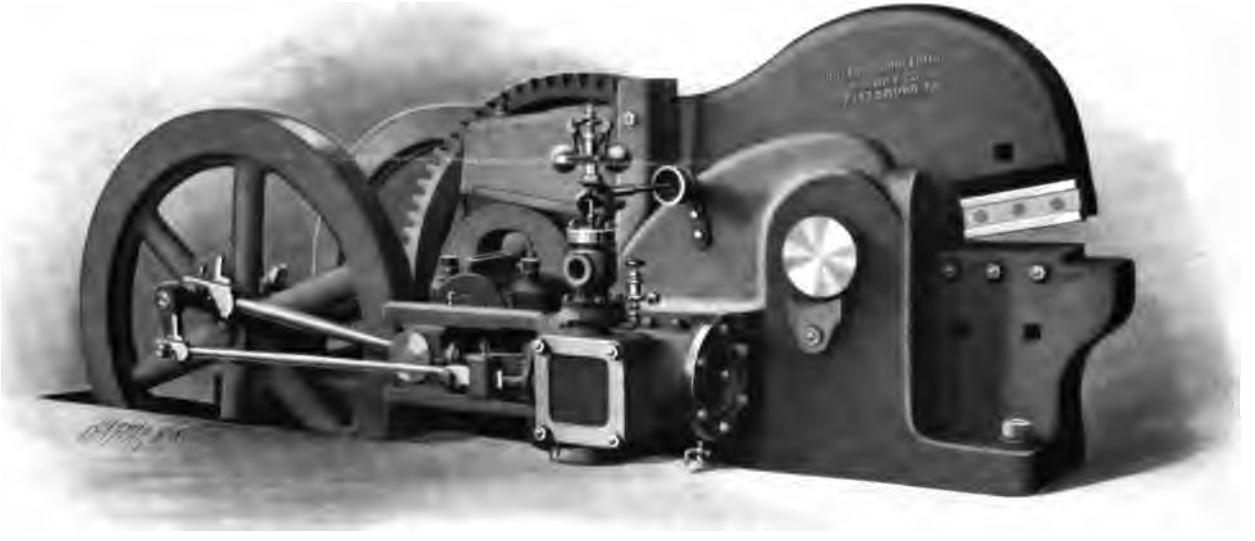

ILLUSTRATION NO. 134

NO. B3 LEVER SHEAR

Engine driven

Capacity, 2¾ x 2¾-inch or 1½ x 8-inch cold soft steel.
Weight, with 8 x 38-inch pulleys, 25,500 pounds.
Weight, with 8½ x 12-inch engine, 27,000 pounds.
Weight, with 20 horse-power electric motor, 28,000 pounds.
Floor space, 6 feet 3 inches x 12 feet 2 inches.
Speed, 20 cuts per minute when fly-wheel shaft runs 129 revolutions per minute.
Gearing, 8-inch face; ratio, 6.45 to 1.
This shear is used for cutting steel billets in connection with 16 to 20-inch roll trains.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 410

No. B3 LEVER SHEAR

Belt driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

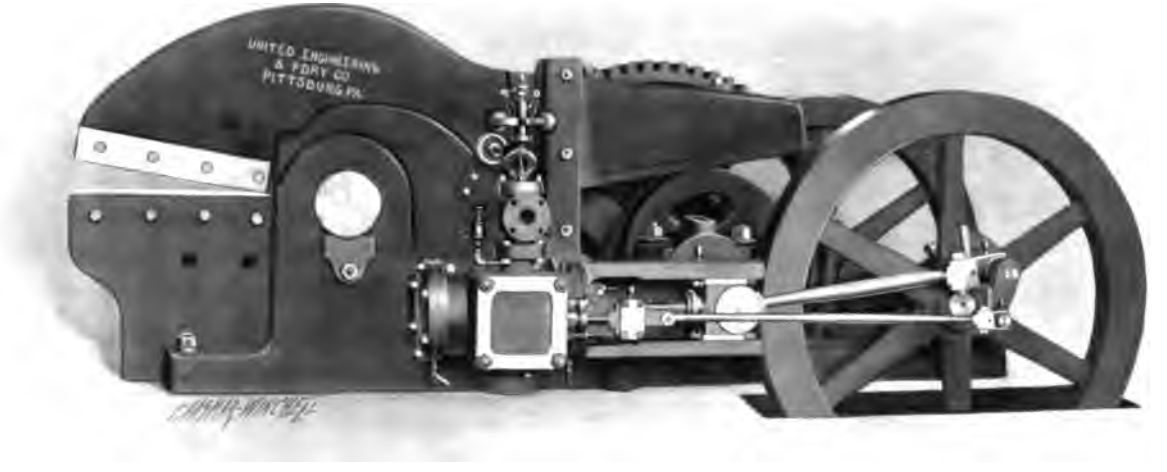

ILLUSTRATION NO. 138

NO. B3 LEVER SHEAR

Engine driven. Arranged with long knives for cutting scrap

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

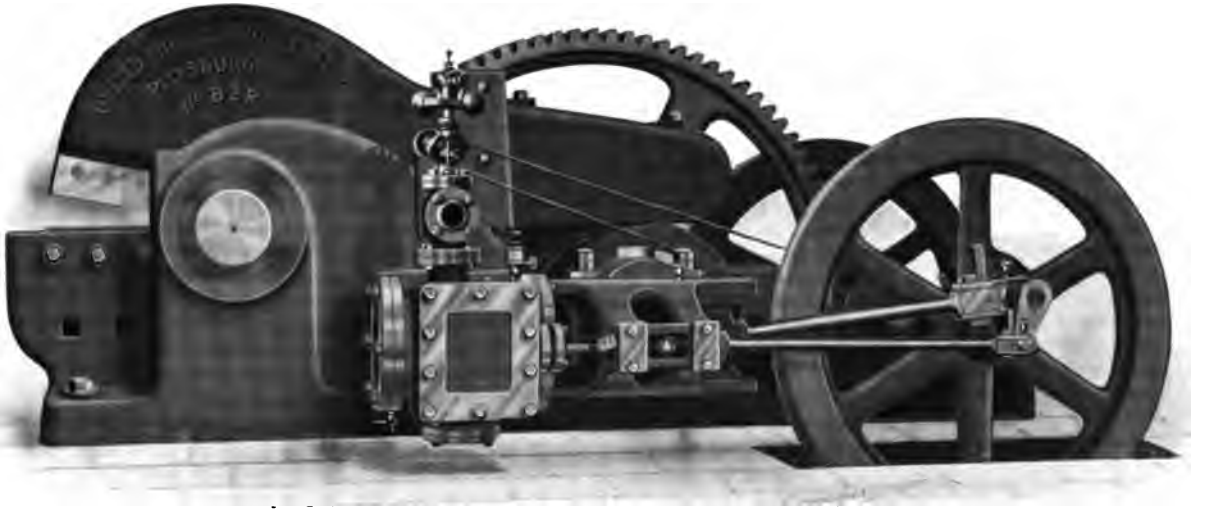

ILLUSTRATION No. 125

No. B2 LEVER SHEAR

Engine driven

Capacity, 3½ x 3½-inch or 4½-inch round cold soft steel.
Weight, with 12 x 42-inch pulleys, 38,000 pounds.
Weight, with 12 x 12-inch engine, 41,000 pounds.
Weight, with 30 horse-power electric motor, 43,000 pounds.
Floor space, 7 feet 6 inches x 14 feet, belt driven.
This shear has cam connection to lever with quick return.
Speed, 20 cuts per minute when fly-wheel shaft runs 162 revolutions per minute.
Gearing, 10-inch face; ratio, 8.1 to 1.
This shear is used largely for cutting billets and rounds, and is also built with long knives for cutting scrap.

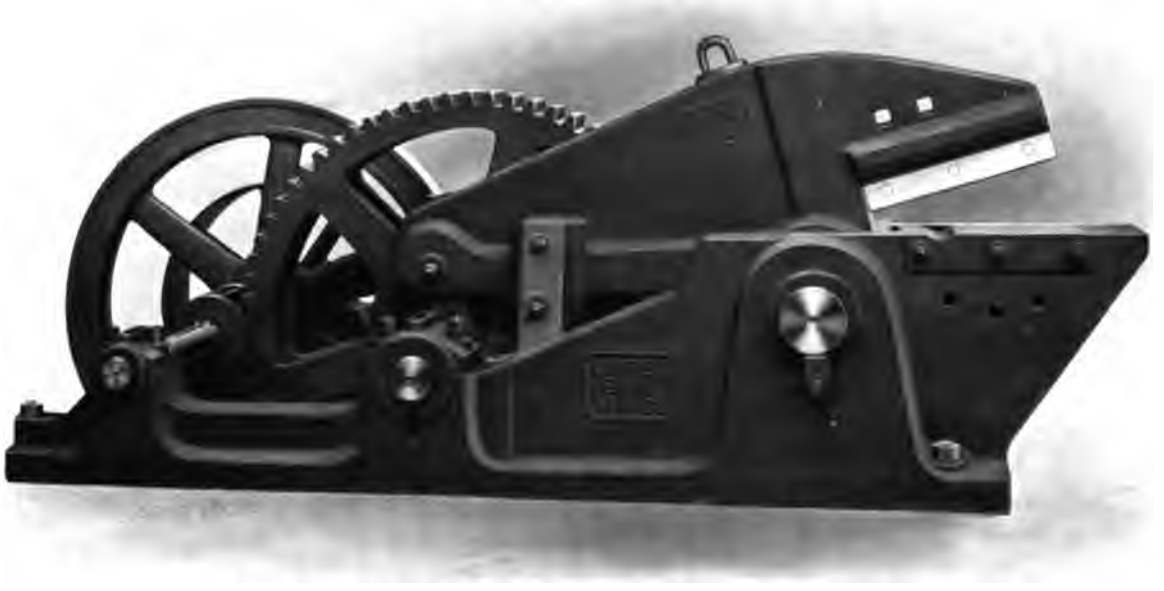

ILLUSTRATION No. 505

No. 5 LEVER SHEAR

Belt driven with high knives

Capacity, 3¾ x 3¾-inch or 1¾ x 14-inch cold soft steel.
Weight, with 12 x 50-inch pulleys, 44,000 pounds.
Weight, with 11 x 12-inch engine, 47,000 pounds.
Weight, with 40 horse-power electric motor, 49,000 pounds.
Floor space, 7 feet 6 inches x 15 feet 4 inches.

Speed, 18 cuts per minute when fly-wheel shaft runs 126 revolutions per minute.
Gearing, 9-inch face; ratio, 7 to 1.
This shear is largely used for cutting billets and rounds, and is also built with long knives for cutting scrap.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 3

NO. 5 LEVER SHEAR

Engine driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

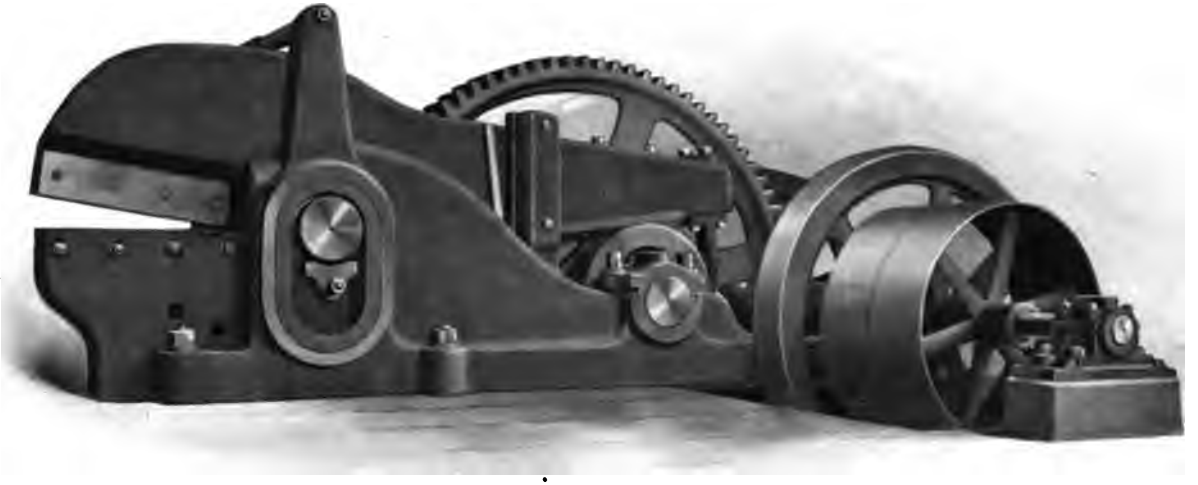

ILLUSTRATION No. 122

No. B 1 LEVER SHEAR

Belt driven

Capacity, 4 x 4-inch or 5-inch round cold soft steel.
Weight, with 12 x 48-inch pulleys, 51,500 pounds.
Weight, with 11 x 16-inch engine, 54,000 pounds.
Weight, with 40 horse-power electric motor, 57,000 pounds.
Floor space, 10 feet x 16 feet 4 inches, belt driven.

Speed, 18 cuts per minute when fly-wheel shaft runs 140 revolutions per minute.
Gearing, 10-inch face; ratio, 7.72 to 1.
This shear is largely used for cutting billets and rounds, and is also built with long knives for cutting scrap.

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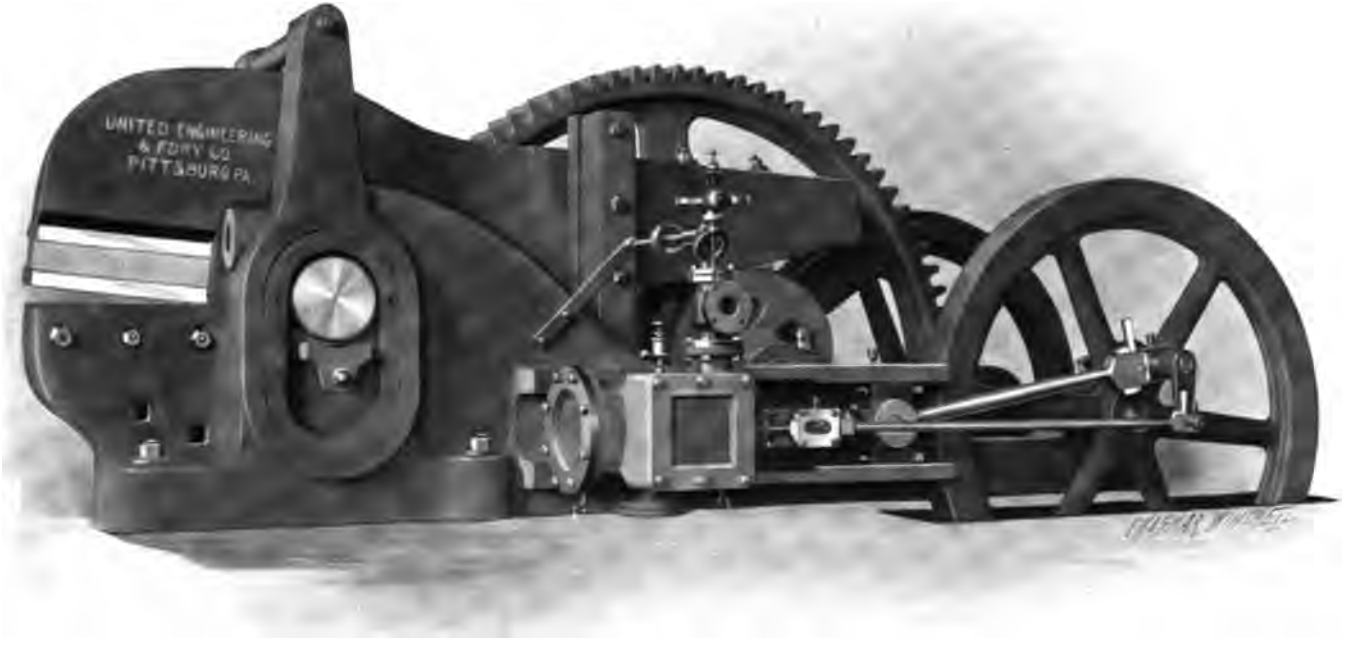


ILLUSTRATION No. 122 A

No. B 1 LEVER SHEAR

Engine driven. Arranged with long knives for cutting scrap

ILLUSTRATION NO. 274

NO. B 1 LEVER SHEAR

Motor driven. Showing special knives for cutting rounds

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 90 A

No. 6 LEVER SHEAR

Belt driven. Arranged with high knife for cutting scrap

Capacity, 5 x 5-inch or 2½ x 12-inch cold soft steel.
Weight, with 16 x 60-inch tight pulley, 91,000 pounds.
Weight, with 14 x 16-inch engine, 100,000 pounds.
Weight, with 75 horse-power electric motor, 105,000 pounds.
Floor space, 9 feet 9 inches x 19 feet 9 inches, belt driven.
Floor space, 8 feet 6 inches x 19 feet 9 inches, engine driven.
The engine used in connection with this shear is of extra heavy design, so as to withstand severe shocks.
Speed, 14 cuts per minute when the fly-wheel shaft runs 101 revolutions per minute.
Gearing has 12-inch face with shrouding; ratio, 7.2 to 1.
This shear is used mostly for cutting large billets and heavy scrap.
When arranged for cutting scrap the top edge of the lower knife is raised to the level of the top of the housing, as shown by Illustrations Nos. 11 and 90 A, so as to give greater freedom in cutting irregular plates, etc. We recommend this shear for all heavy work up to its capacity, and especially for scrap yard purposes.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

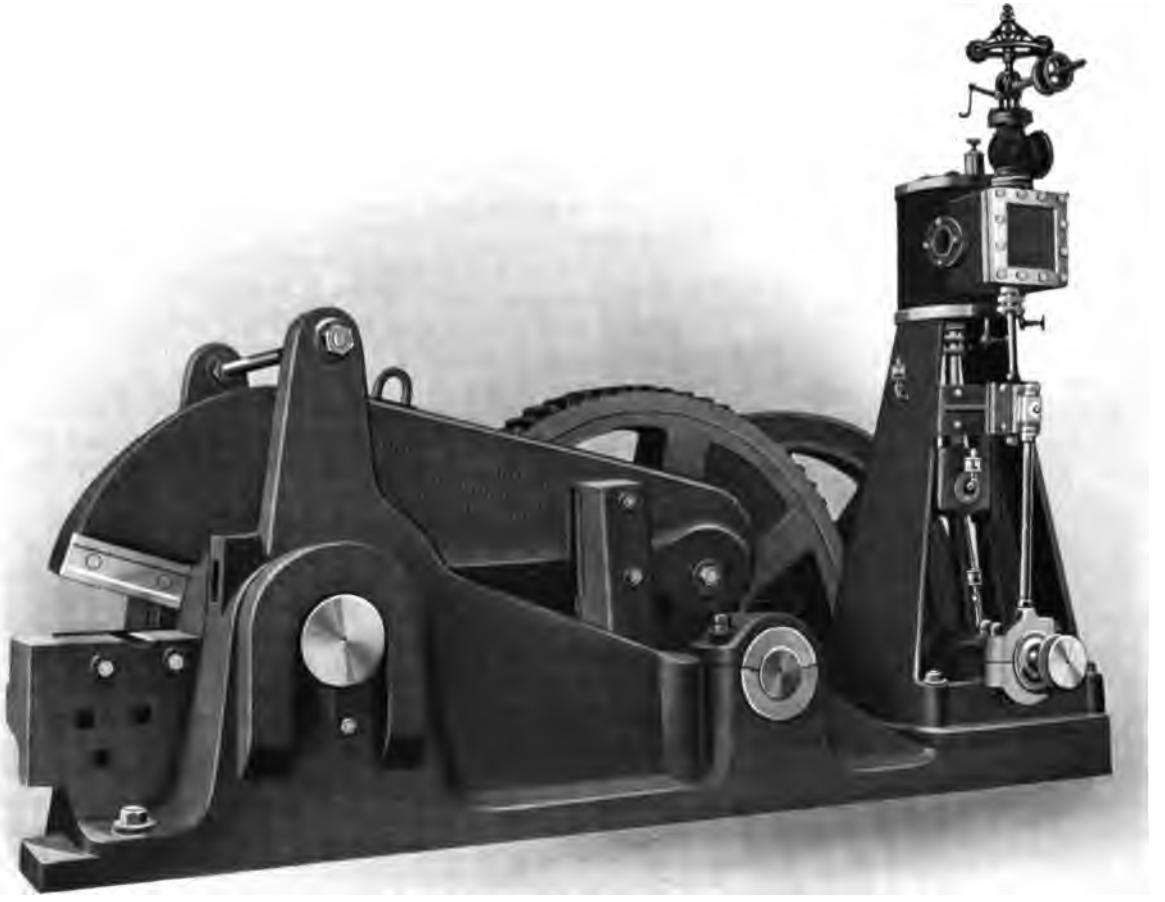


ILLUSTRATION No. 114

No. 6 LEVER SHEAR

Engine driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 11

No. 6 LEVER SHEAR

Motor driven. Arranged with high knife for cutting scrap

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 506

No. 6 LEVER SHEAR

Motor driven. Arranged with low knife

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

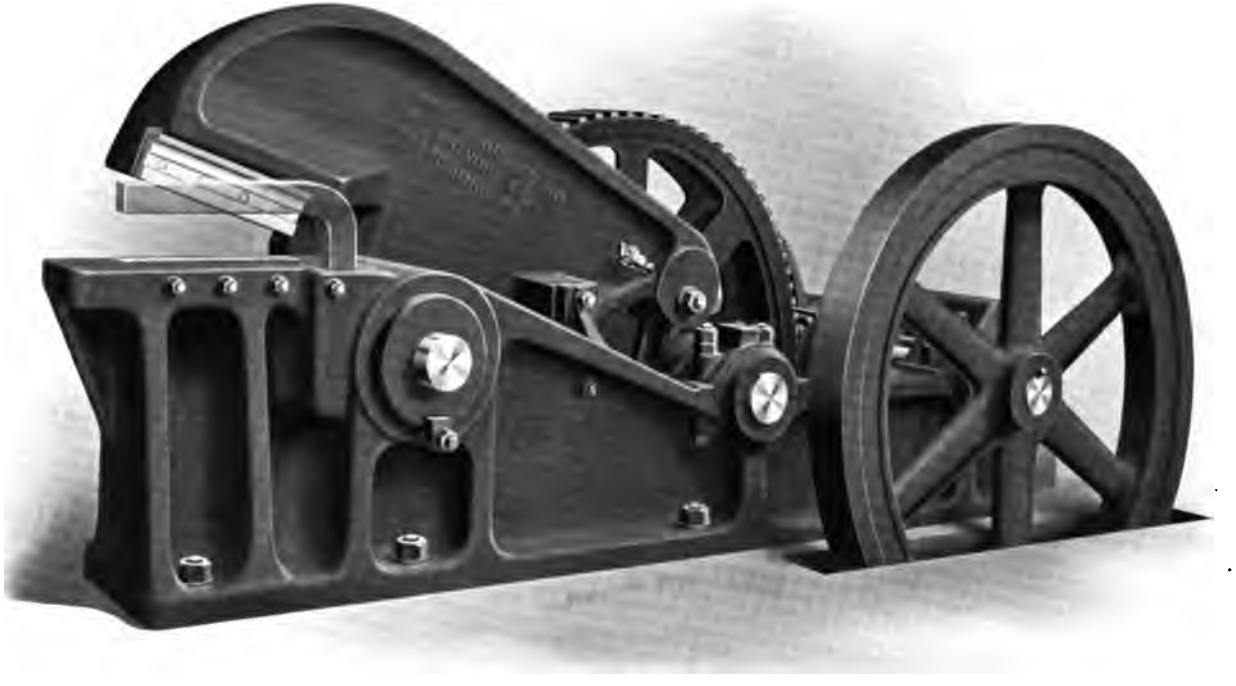


ILLUSTRATION No. 704

No. 25 LEVER SHEAR

Motor driven. Made with cast-steel bed, lever and gearing

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 300

No. 7 LEVER SHEAR

Engine driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

No. 7 LEVER SHEAR

Engine driven

The most powerful shear ever built. Showing the shear erected at Worth Bros. Company

In one of our former catalogues we said of our No. 6 shear: "This shear has been designed to cut as heavy as is practicable before crushing the knives." The light of increased experience has, however, induced us to "try again," with the result of producing a shear the weight and capacity of which far exceed any previous attempt. No trouble has been found from crushing of knives, and the shear has cut to its rated capacity without apparent effort. We hesitate to speak of the possibilities of the future, but firmly believe that for many years this shear must stand the giant of its kind.

Detailed description of the shear is as follows:

Pitman connected.

Capacity, 6½ x 6½-inch cold soft steel and miscellaneous extra heavy scrap.

Knives, 36 inches long, with four cutting edges.

Weight, belt driven and equipped with stop motion clutch, 200,000 pounds.

Weight, with 15 x 16-inch specially designed heavy duty piston valve engine, 171,000 pounds.

Weight, with 125 horse-power electric motor, 200,000 pounds.

Floor space, 10 feet 3 inches x 23 feet.

Speed, 12 cuts per minute when fly-wheel runs 90 revolutions per minute.

When belt driven the fly-wheel rim is made with a 12-inch face for the belt to run on.

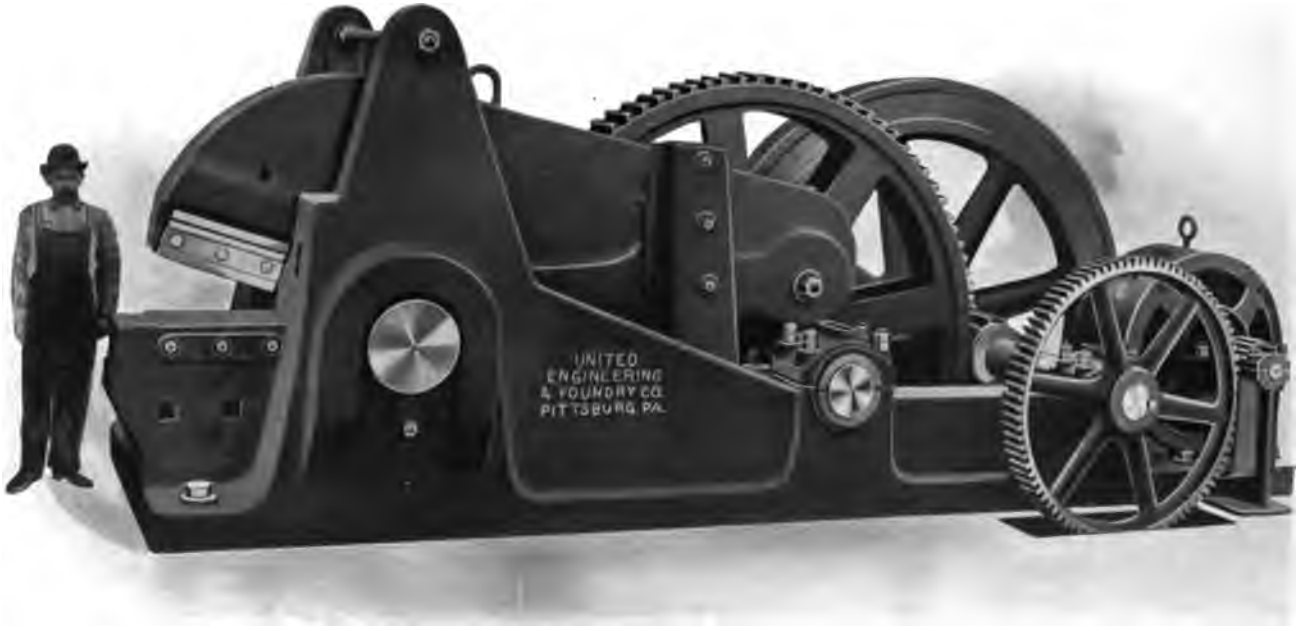


ILLUSTRATION No. 411

No. 7 LEVER SHEAR

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

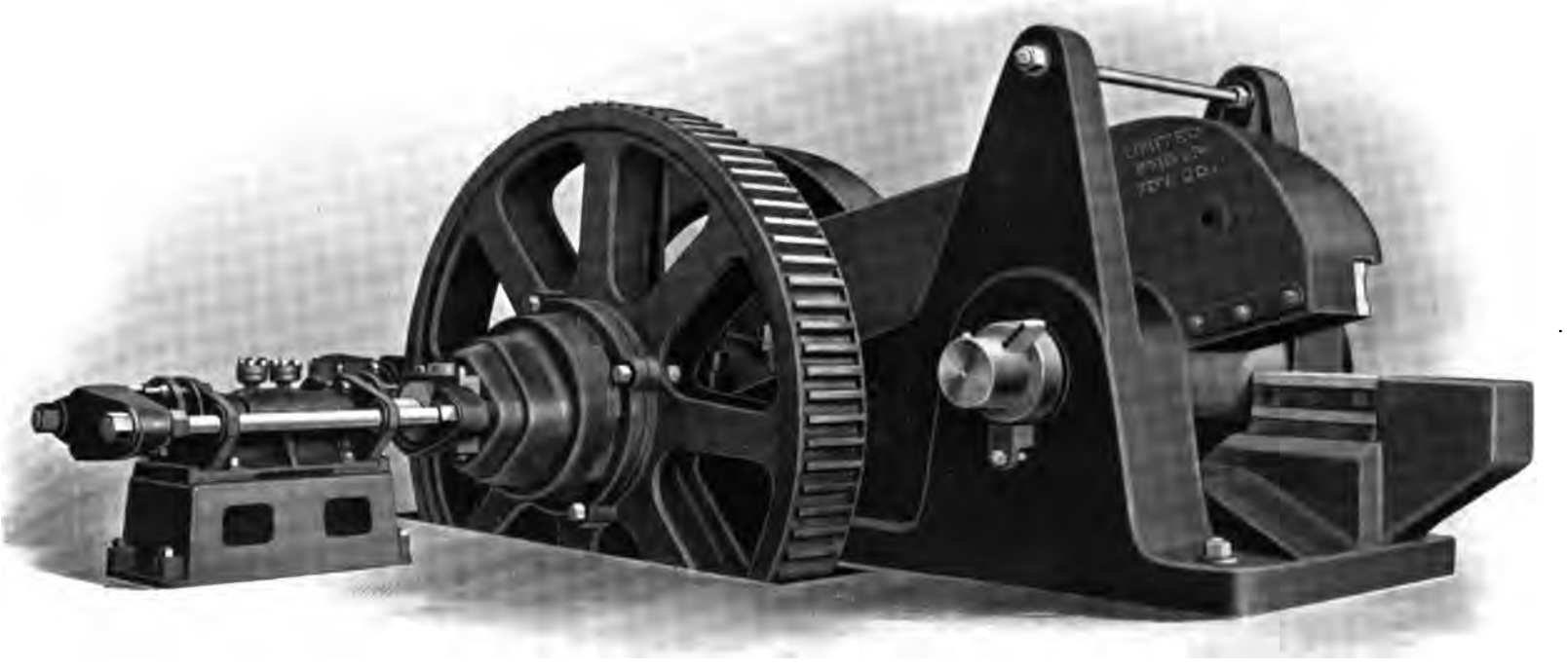


ILLUSTRATION No. 673

No. 7 LEVER SHEAR

Equipped with stop motion clutch. Operated by hydraulic cylinder

We also build this shear with electrically-operated stop motion clutch

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

VERTICAL SHEARS & PUNCHES

FOR certain classes of work, such as cutting and punching plates and bars, the type of machine illustrated on the following pages is indispensable. It is also much used where floor space is a consideration. We manufacture these machines for any reasonable duty. The machines are all constructed on the same general plan, strong, durable, adjustable and simple. The main shafts are forged steel. The housing has bronze bushing for front and back end of the shaft, as has also the pitman which operates the head, the bearing in the front plate, and also the wheel when the machine is made with a stop clutch. The wear on the sliding head is taken up by a wedge, and a brass liner is put in to take the side thrust of the head. We build these shears with the head actuated by a pitman in some cases and a sliding brass in others. The lower end of the pitman takes a bearing in a bronze step, which is also adjustable for wear.

We adapt these machines to varying conditions, making them with movable or fixed knife holders, or for punches, straightening presses, broaching or forging machines, as the wants may arise, and design each machine for the special duty it may perform.

ILLUSTRATION No. 302

No. 1 VERTICAL SHEAR

Has capacity to shear 1¼ x 1¼-inch or ½ x 3-inch cold soft steel, or punch ¾-inch hole in ½-inch plate.

Gearing, 5-inch face; ratio, 5¼ to 1.

Tight and loose pulleys, 24 inches diameter for 6-inch belt.

Speed, 35 cuts per minute when fly-wheel shaft runs 184 revolutions per minute.

Floor space, 7 x 4 feet.

Weight, belt driven, 8000 pounds.

Can be built right- or left-hand with knives as shown, or at right angle. Any of these shears may be equipped with clutch and stop motion if desired.

We also build this shear with direct-connected engine or electric motor.

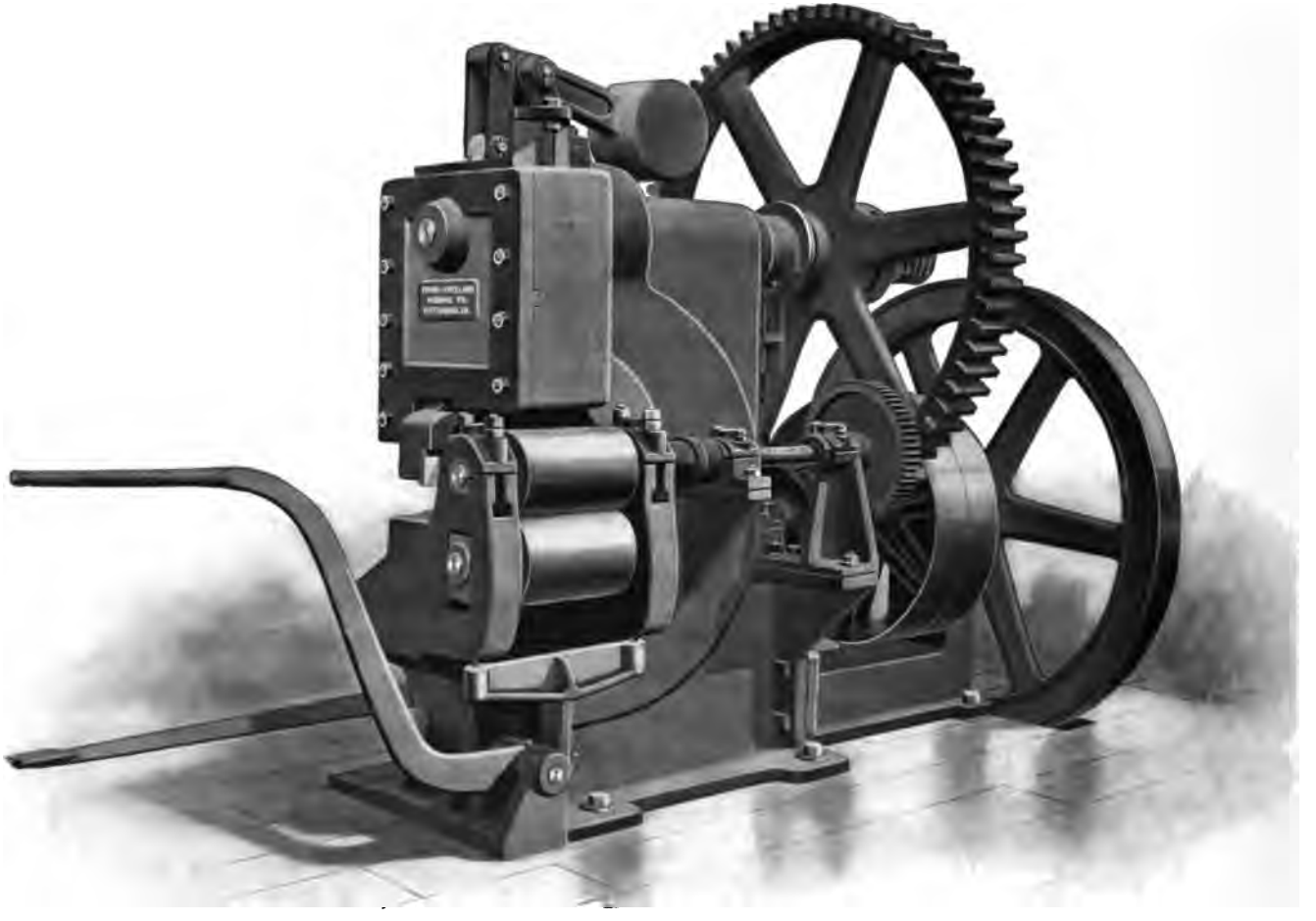


ILLUSTRATION No. 179

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

No. 2 VERTICAL SHEAR WITH FEED ROLLERS

Belt driven

Has a capacity to shear 1 5/8 x 1 5/8-inch or 3/4 x 6-inch cold soft steel, or to punch 1-inch hole in 3/4-inch plate.

Weight, with 6½ x 30-inch pulleys, 13,600 pounds.

Weight, with 8 x 8-inch engine, 13,000 pounds.

Weight, with 10 horse-power electric motor, 14,000 pounds.

Floor space, 8 feet 3 inches x 5 feet.

Speed, 30 cuts per minute when fly-wheel shaft runs 210 revolutions per minute.

Gearing, 6-inch face; ratio, 7 to 1.

This shear can be built right- or left-hand, or with knives at right angle. It is suitable for cutting skelp or sheet bars, and when equipped with feed rollers as shown by Illustration No. 179, is very convenient for cutting long lengths of bars.

This shear is usually equipped with a stop motion.

See Illustrations Nos. 12 and 66.

ILLUSTRATION No. 12

No. 2 VERTICAL SHEAR
WITHOUT FEED ROLLERS

Belt driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 66

No. 2 VERTICAL SHEAR

Engine driven. Special design to save floor space

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 111

No. 3 VERTICAL SHEAR

Belt driven

Has capacity to shear 2½ x 2½-inch or 1½ x 8-inch cold soft steel, or to punch 2-inch hole in a 1-inch plate.

Gearing, 8-inch face; ratio, 6½ to 1.

Weight, with 8½ x 32-inch pulleys, 17,000 pounds.

Weight, with 9 x 12-inch engine, 19,000 pounds.

Weight, with 15 horse-power electric motor, 20,000 pounds.

Floor space, 9 feet x 5 feet 6 inches.

Speed, 25 cuts per minute when fly-wheel shaft runs 162 revolutions per minute.

Can be built right- or left-hand with knives as shown, or at right angle.

We also build this shear equipped with feed rollers for cutting skelp and sheet bars of long lengths, and it is usually equipped with a stop motion.

See Illustrations Nos. 111, 38 and 95.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

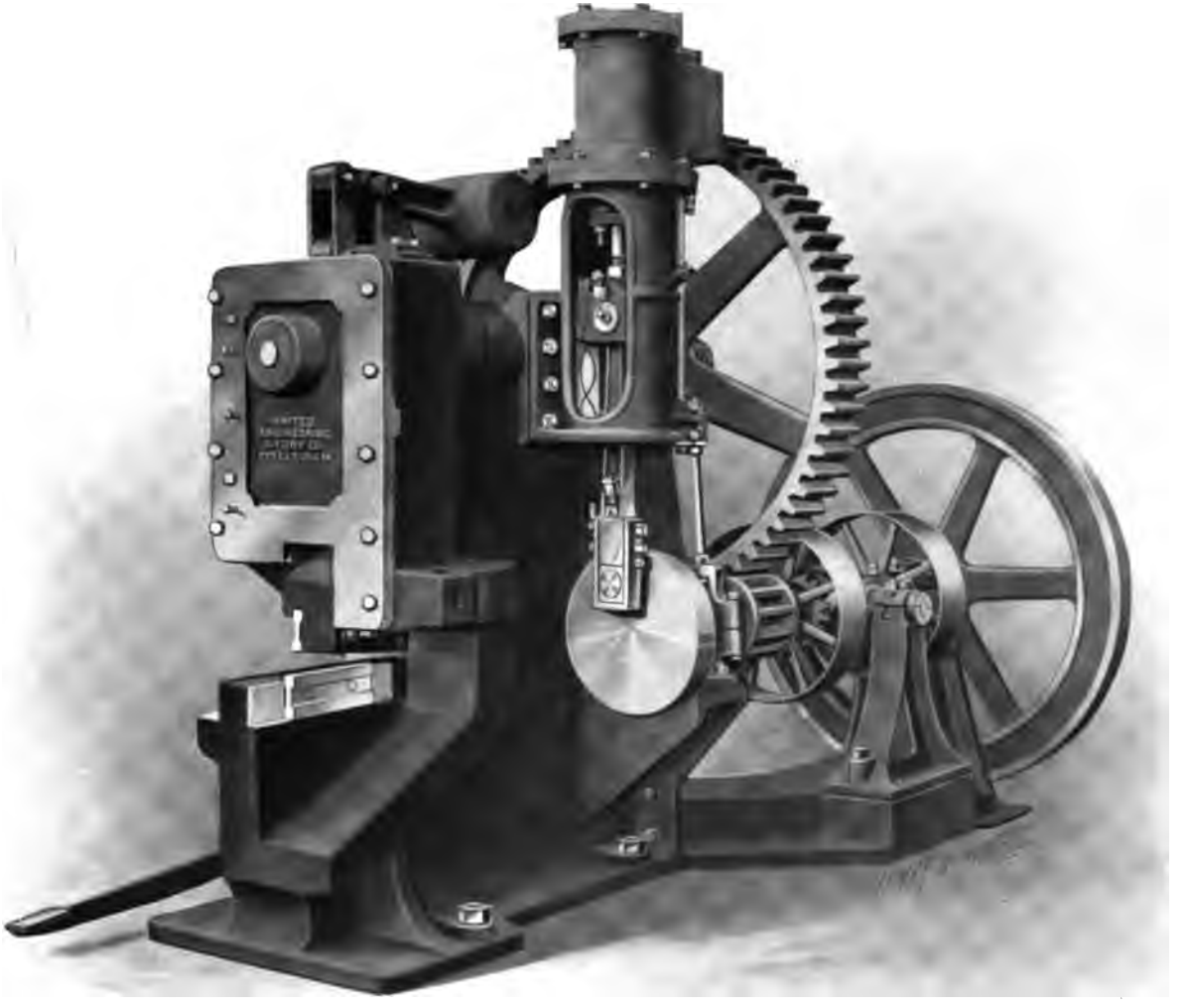


ILLUSTRATION No. 38

No. 3 VERTICAL SHEAR

Engine driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

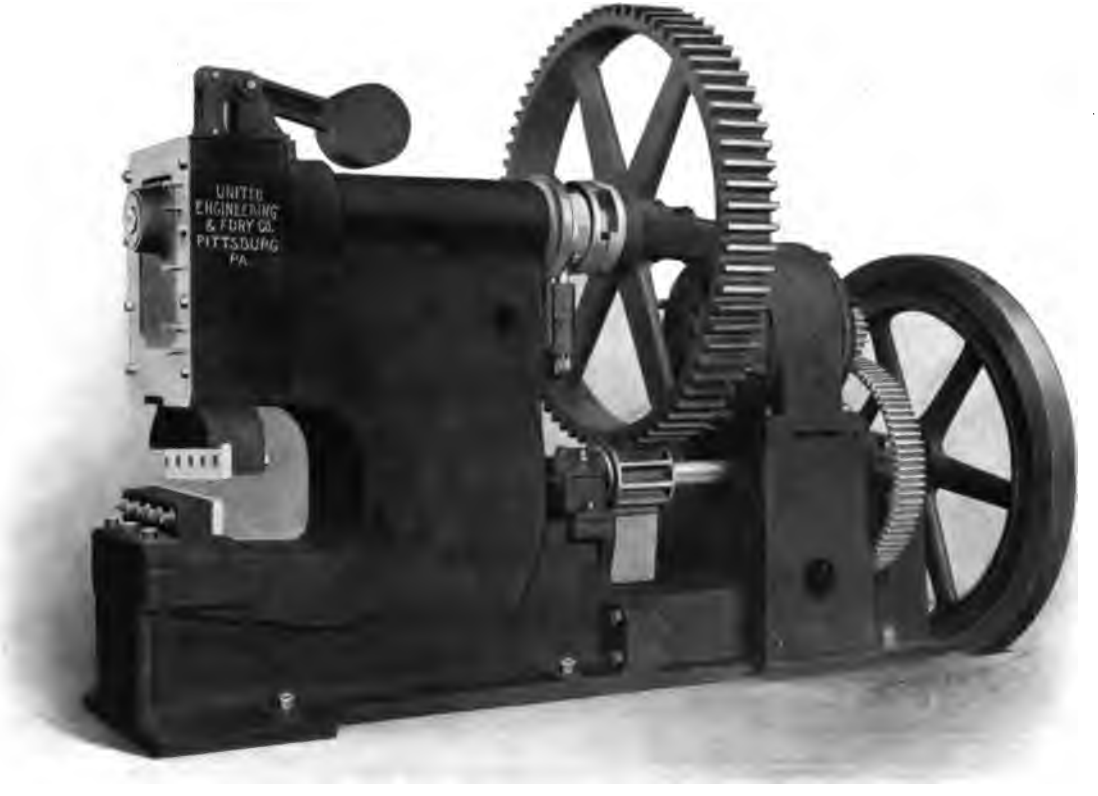


ILLUSTRATION No. 95

No. 3 VERTICAL SHEAR

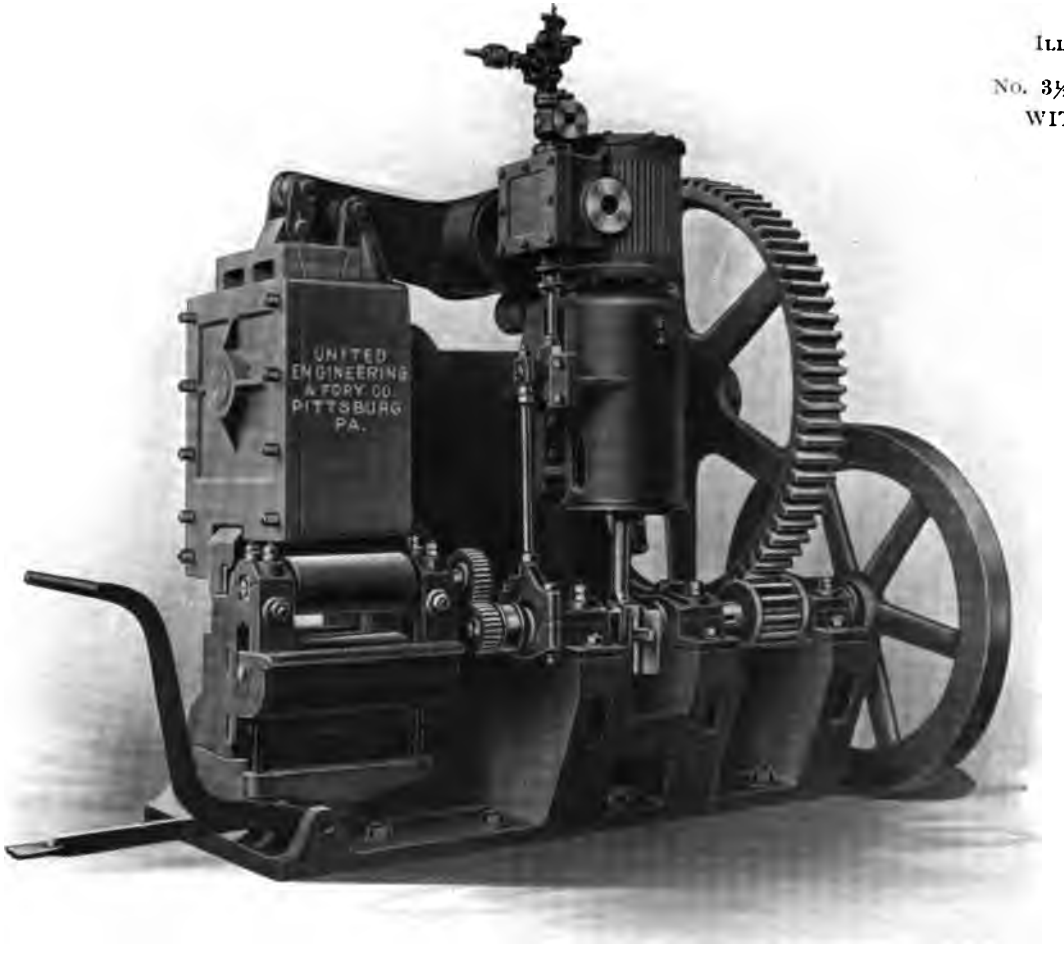
Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 487

No. 3½ VERTICAL SHEAR WITH PINCH ROLLS

Engine driven



Has capacity to shear 2¾ x 2¾-inch or 1½ x 12-inch cold soft steel, or to punch a 2½-inch hole in a 1-inch plate.
Weight, with 9 x 42-inch pulleys, 31,000 pounds.
Weight, with 9 x 12-inch engine, 31,000 pounds.
Weight, with 20 horse-power electric motor, 33,000 pounds.
Gearing, 8-inch face; ratio, 7½ to 1.
Floor space, 5 feet 6 inches x 11 feet 6 inches.
Speed, 25 cuts per minute when fly-wheel shaft runs 188 revolutions per minute.

This shear is somewhat different from our other vertical shears, having a sliding brass instead of a pitman for operating the knife head; see Illustrations Nos. 487, 123 and 99. It is also built with 30-inch knives and 30-inch gap arranged for slitting plates up to ⅝-inch thick. The slitting shear with 8 x 10-inch engine weighs 24,000 pounds; see Illustration No. 95, which shows similar arrangement.

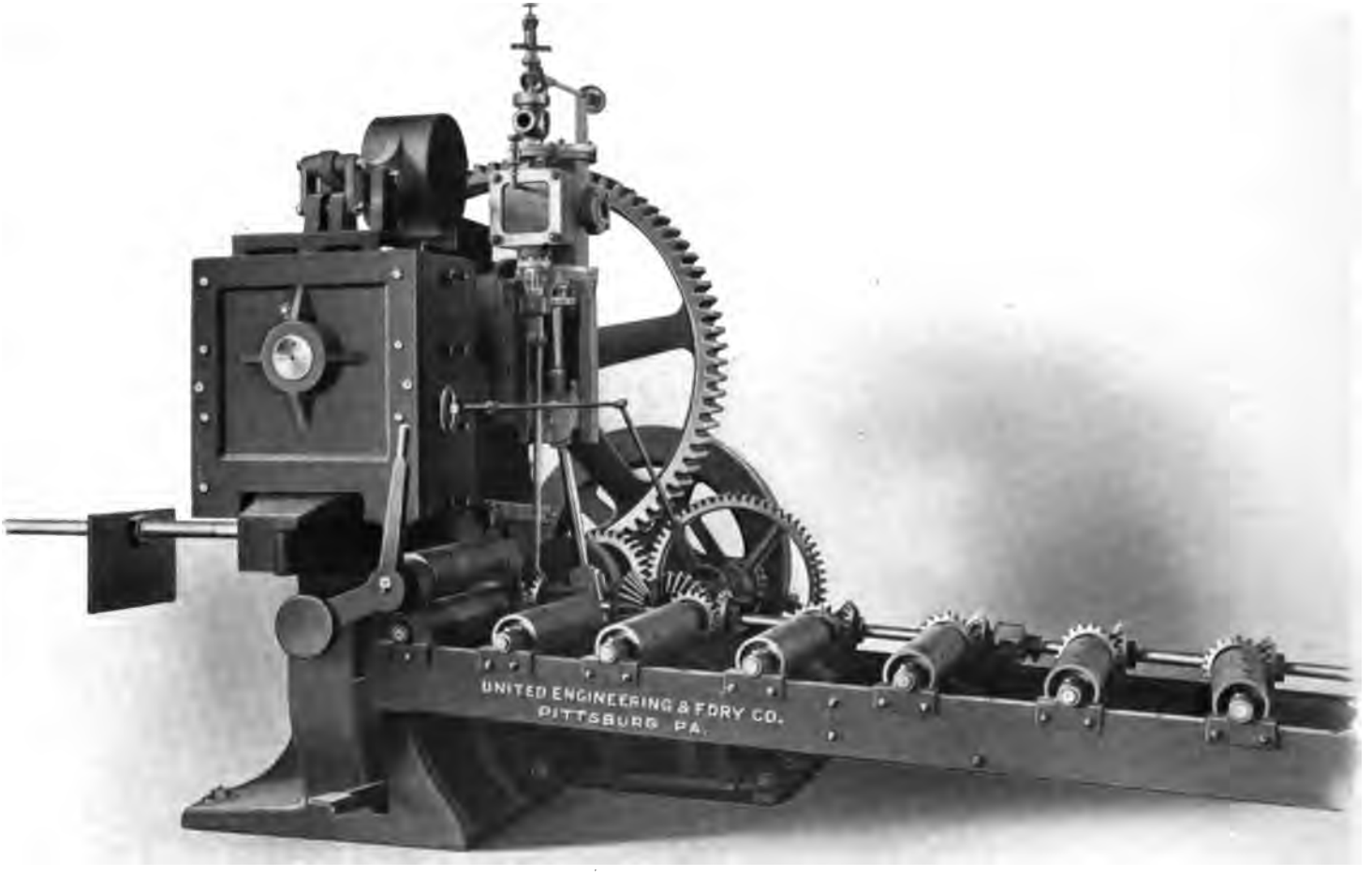


ILLUSTRATION No. 123

No. 3½ VERTICAL SHEAR

Engine driven

Equipped with pinch rolls and feed roller table

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

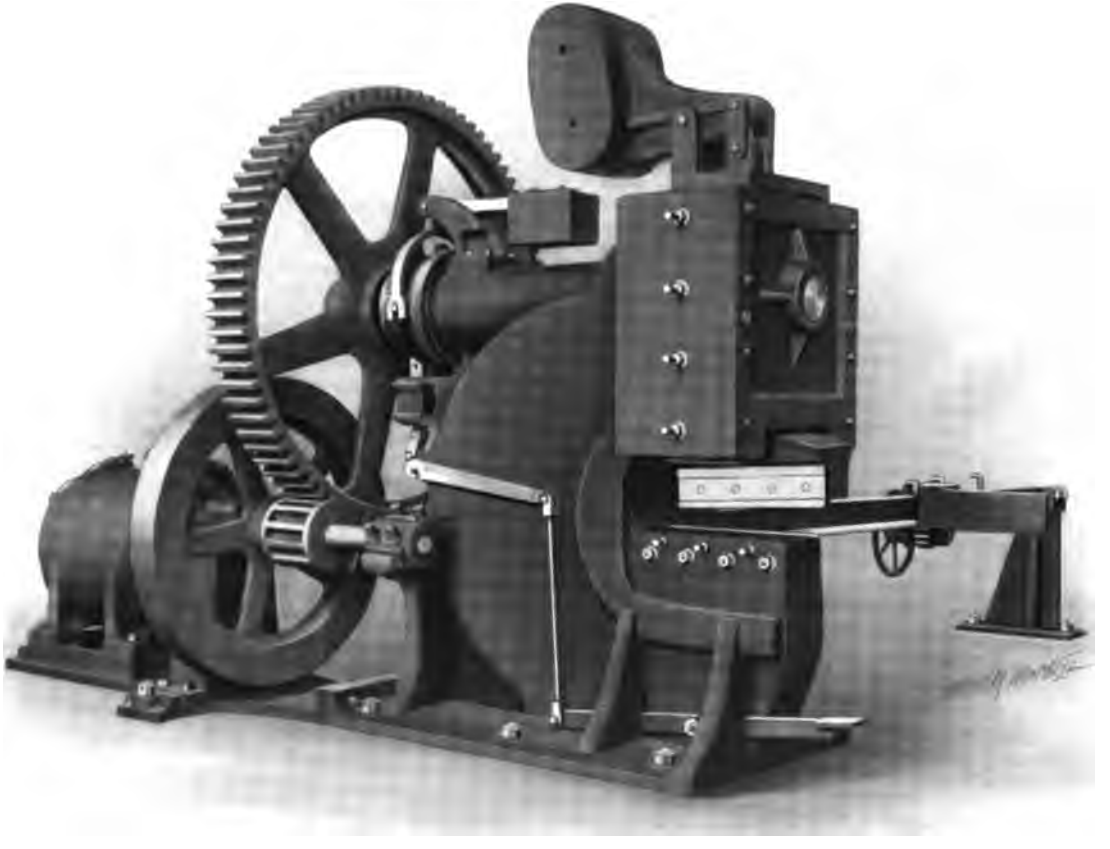


ILLUSTRATION No. 99

No. 3½ VERTICAL SHEAR—WITH STOP GAUGE

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

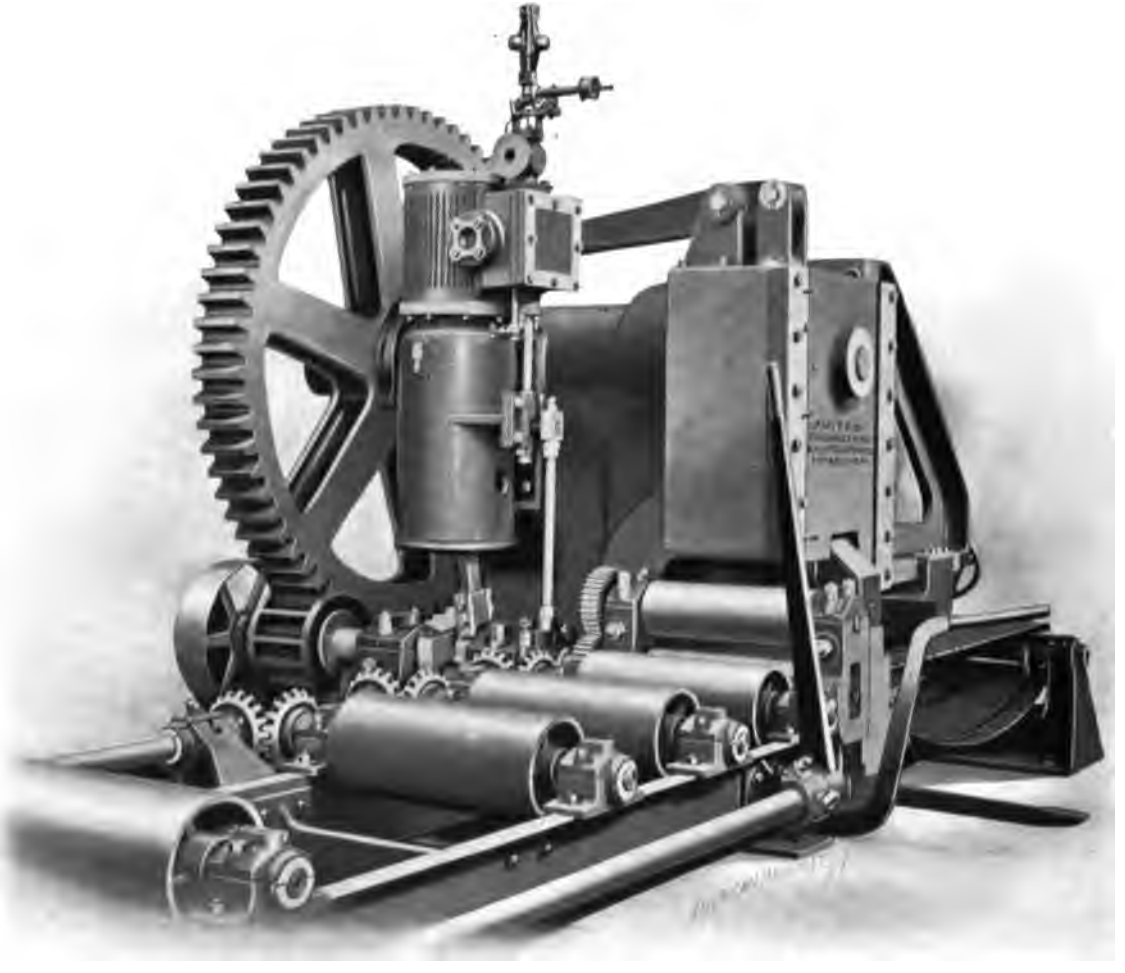


ILLUSTRATION NO. 88

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

No. 4 VERTICAL SHEAR

Engine driven

Left-hand, with pinch rollers, gauge and feed roller table

Has capacity to shear 3½ x 3½-inch or 1½ x 24-inch cold soft steel, or to punch a 4-inch hole in a 1-inch plate.

Weight, with 12 x 48-inch pulleys, 42,000 pounds.

Weight, with 11 x 12-inch engine, 45,000 pounds.

Weight, with 30 horse-power electric motor, 45,000 pounds.

Floor space, 6 x 11 feet.

Speed, 25 cuts per minute when fly-wheel shaft runs 160 revolutions per minute.

Can be built right- or left-hand with knives as shown, or at right angle.

Illustrations Nos. 88 and 88 A show this shear engine driven, equipped with approach table, feed rollers and conveyors, making a suitable arrangement for cutting long plates, billets, etc., with a minimum amount of labor.

The approach table, feed rollers and conveyor are all driven by the engine or electric motor which drives the shear, the whole operation being controlled by one man.

Illustration No. 251 shows this shear arranged as a double shear, one side being used for cross-cutting and the other for slitting. This arrangement is very desirable where it is necessary to economize in space.

See also Illustrations Nos. 417-A and 417-B.

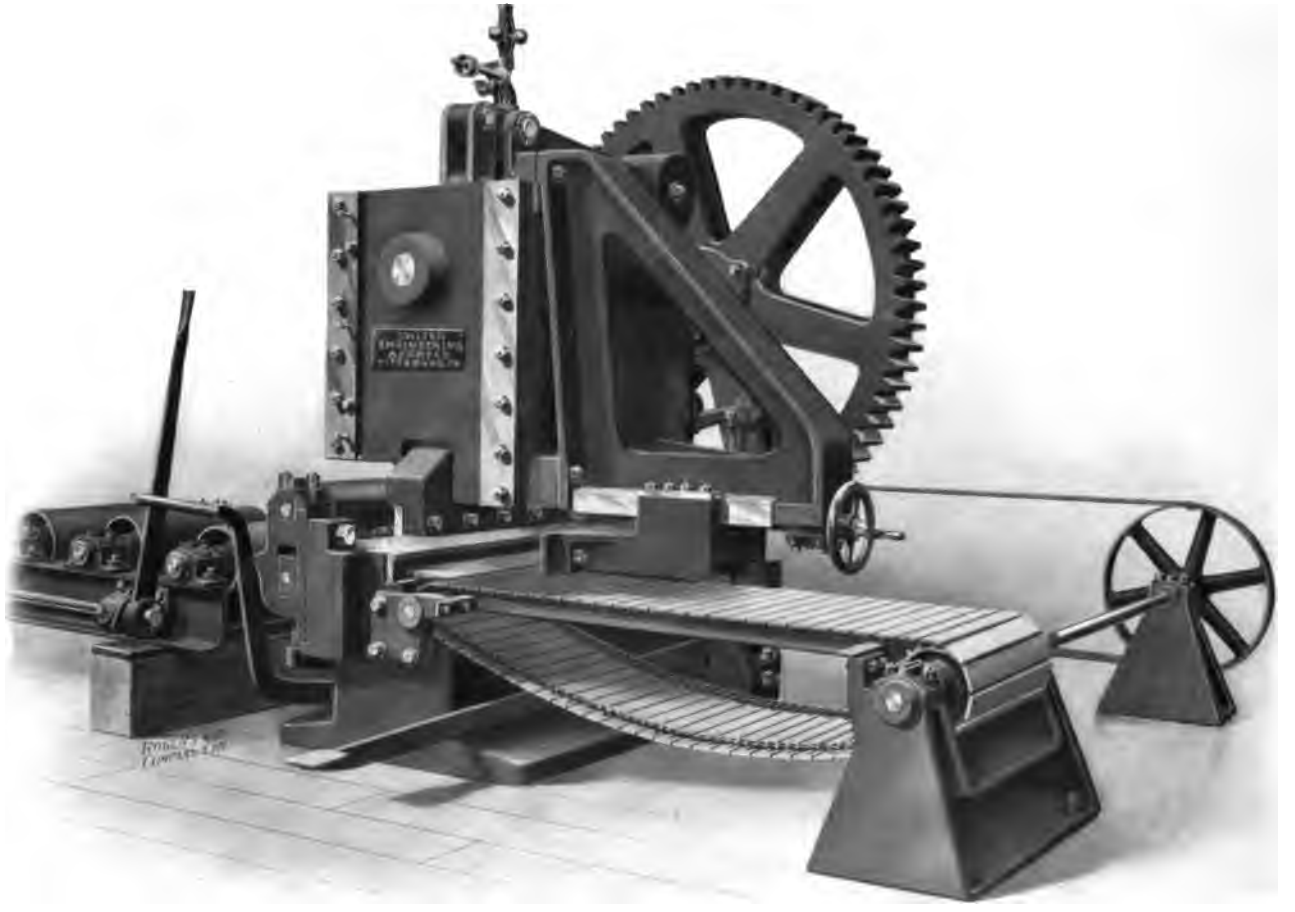


ILLUSTRATION NO. 88 A

NO. 4 VERTICAL SHEAR

Engine driven

With pinch rollers, gauge and feed roller table

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 417 A

No. 4 VERTICAL SHEAR

Motor driven

Equipped with special knives for shearing beams

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

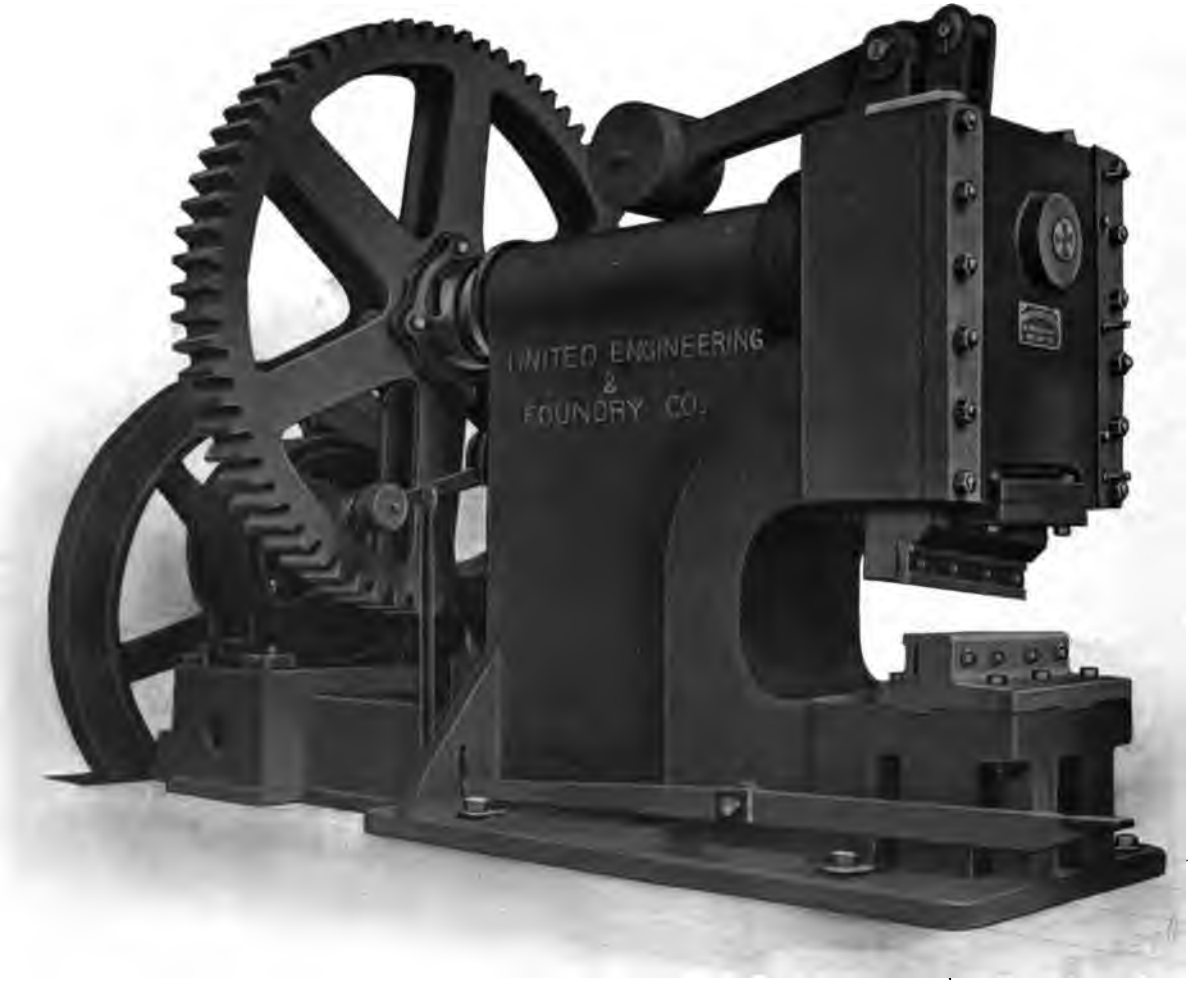


ILLUSTRATION No. 417 B

No. 4 VERTICAL SHEAR—FOR SLITTING PLATES

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

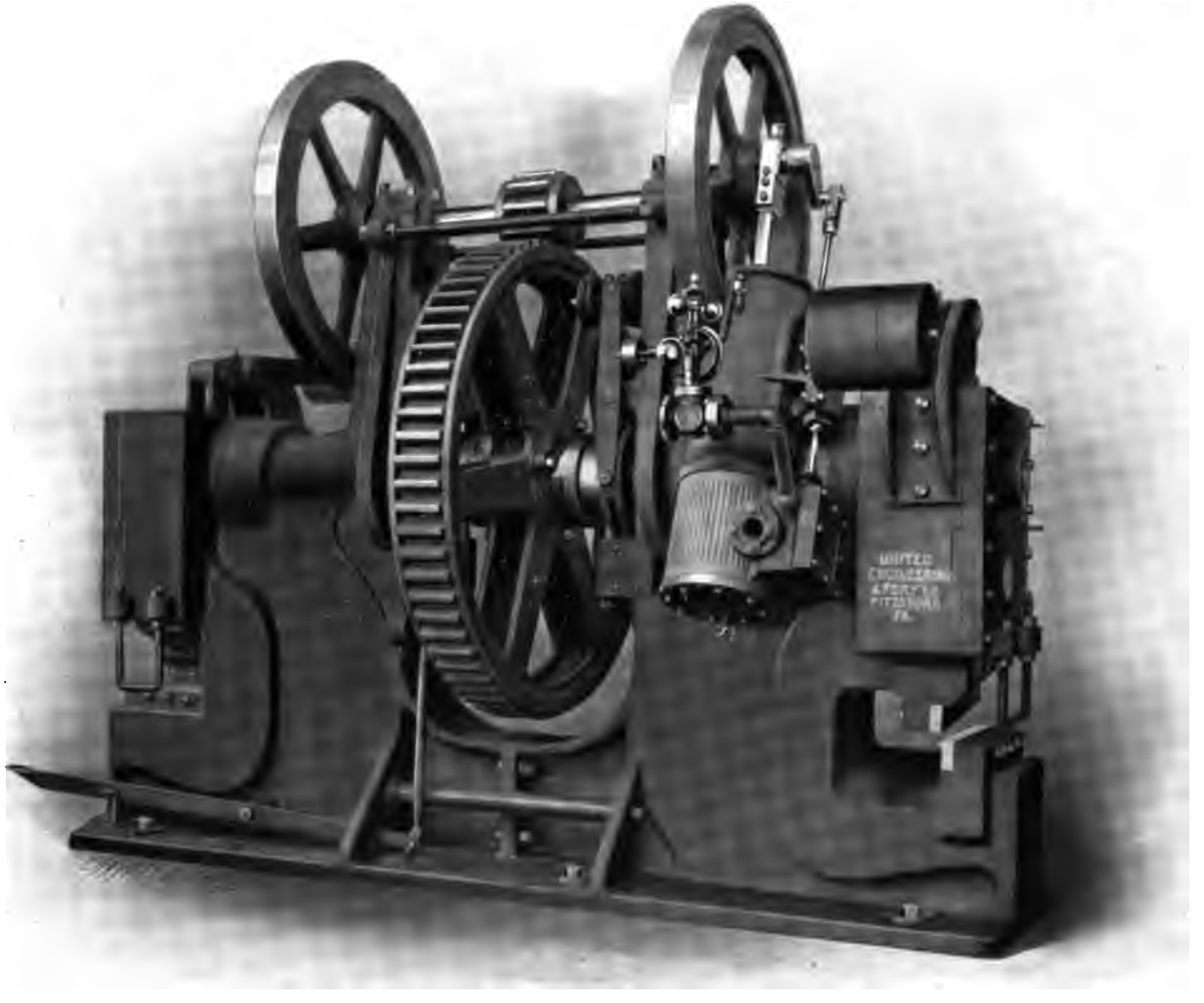


ILLUSTRATION No. 251

No. 4 DOUBLE VERTICAL SHEAR—FOR SLITTING AND CROSS CUTTING

Engine driven

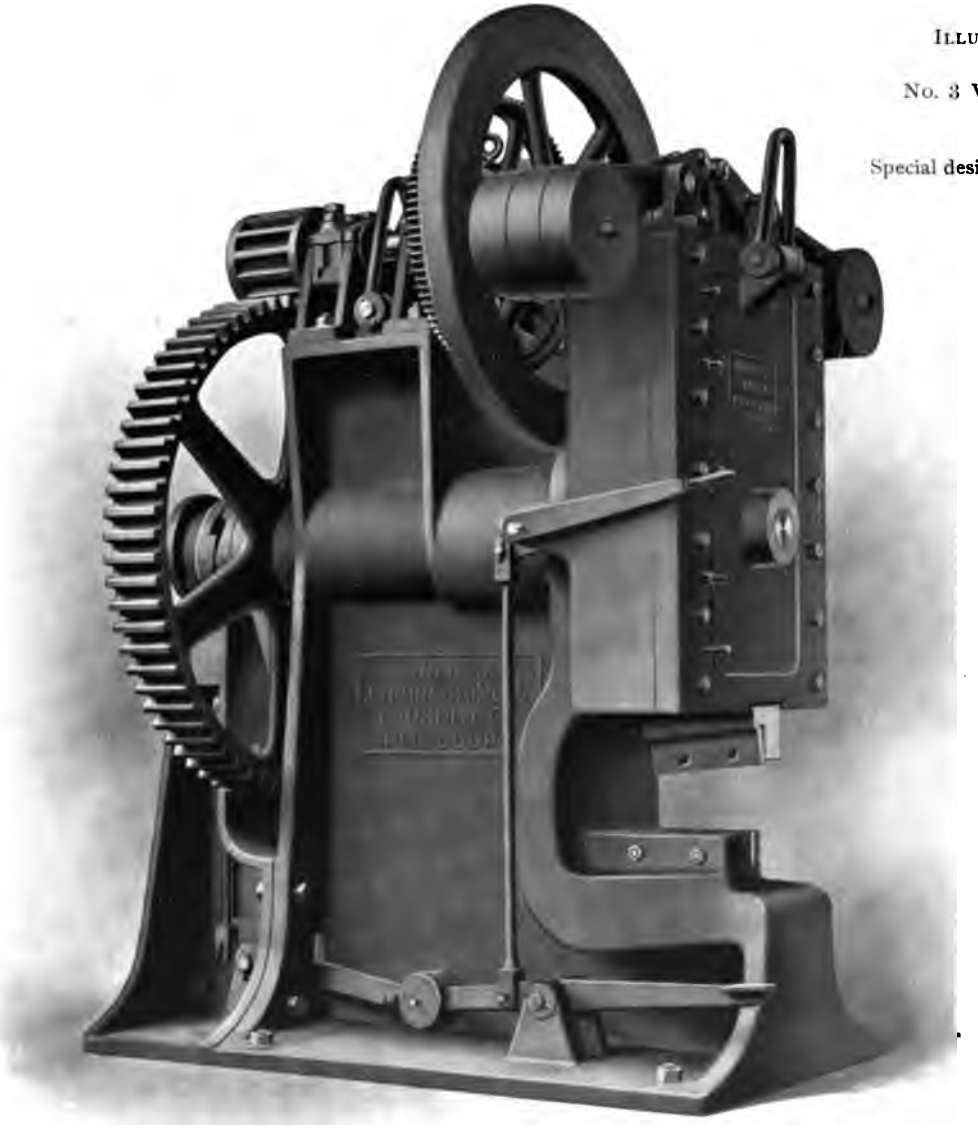


ILLUSTRATION No. 508

No. 3 VERTICAL SHEAR

Motor driven

Special design for shearing scrap pipe

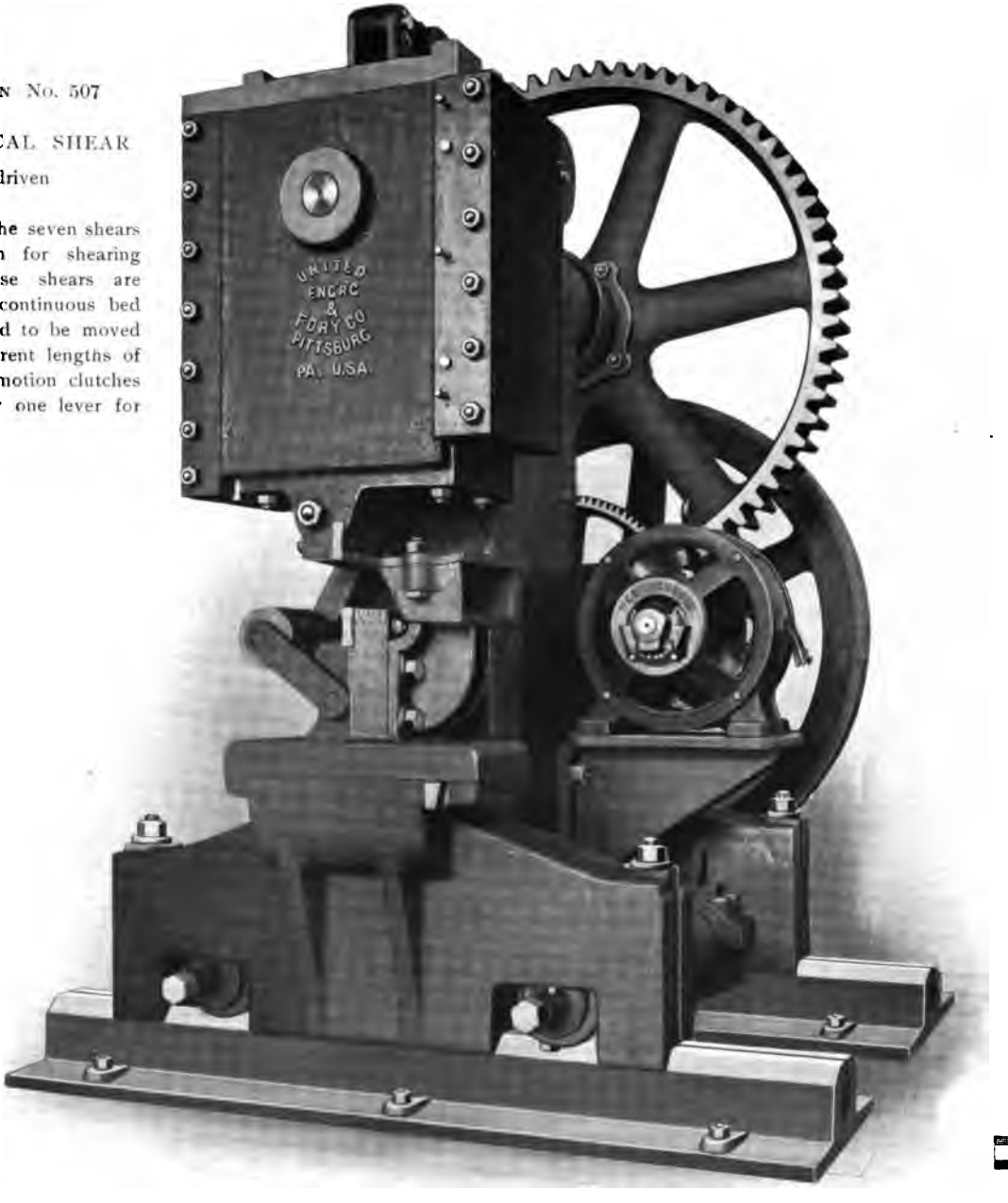
UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 507

No. 4 VERTICAL SHEAR

Motor driven

This is one of the seven shears of special design for shearing sheet bar. These shears are mounted on a continuous bed plate and arranged to be moved sidewise for different lengths of bars. The stop motion clutches are controlled by one lever for all shears.

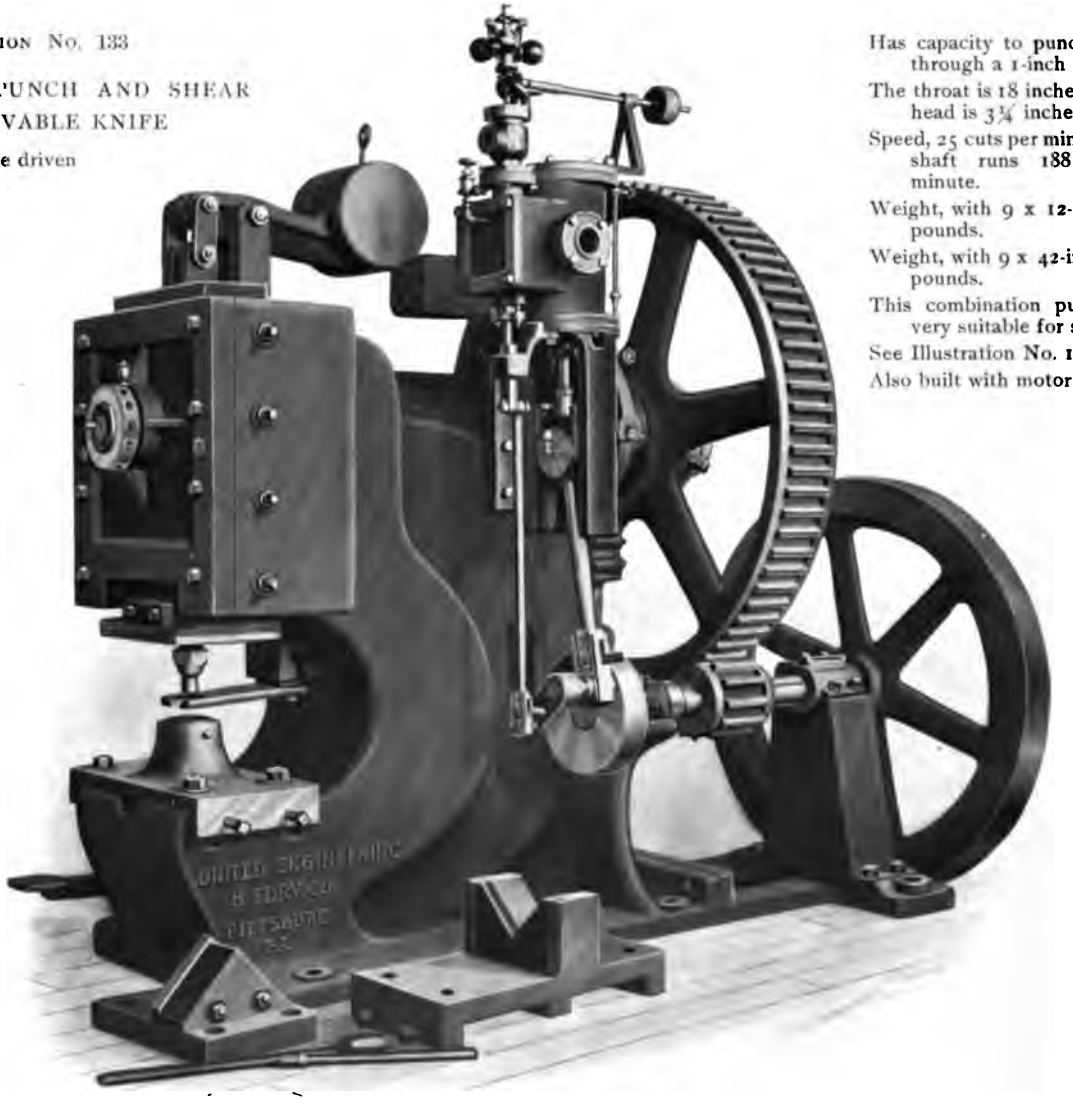


UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 133

No. 0 VERTICAL PUNCH AND SHEAR WITH REMOVABLE KNIFE

Engine driven



Has capacity to punch a 2½-inch hole through a 1-inch soft steel plate.

The throat is 18 inches deep. Stroke of head is 3¼ inches.

Speed, 25 cuts per minute when fly-wheel shaft runs 188 revolutions per minute.

Weight, with 9 x 12-inch engine, 30,000 pounds.

Weight, with 9 x 42-inch pulleys, 28,000 pounds.

This combination punch and shear is very suitable for structural shops.

See Illustration No. 133.

Also built with motor drive.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 503

No. 3 VERTICAL RAIL PUNCH

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

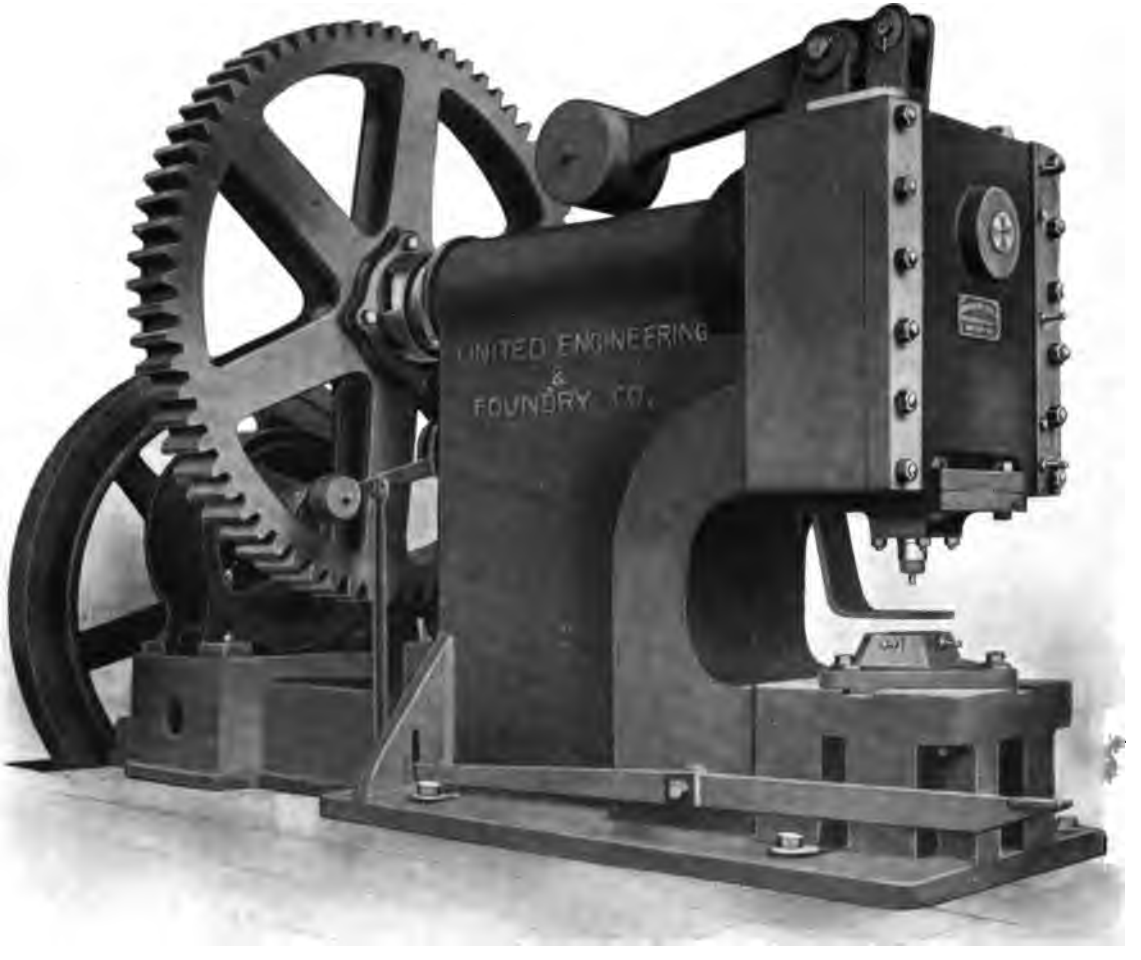


ILLUSTRATION NO. 417 C

NO. 4 VERTICAL PUNCH

Motor driven. For description, see page 237

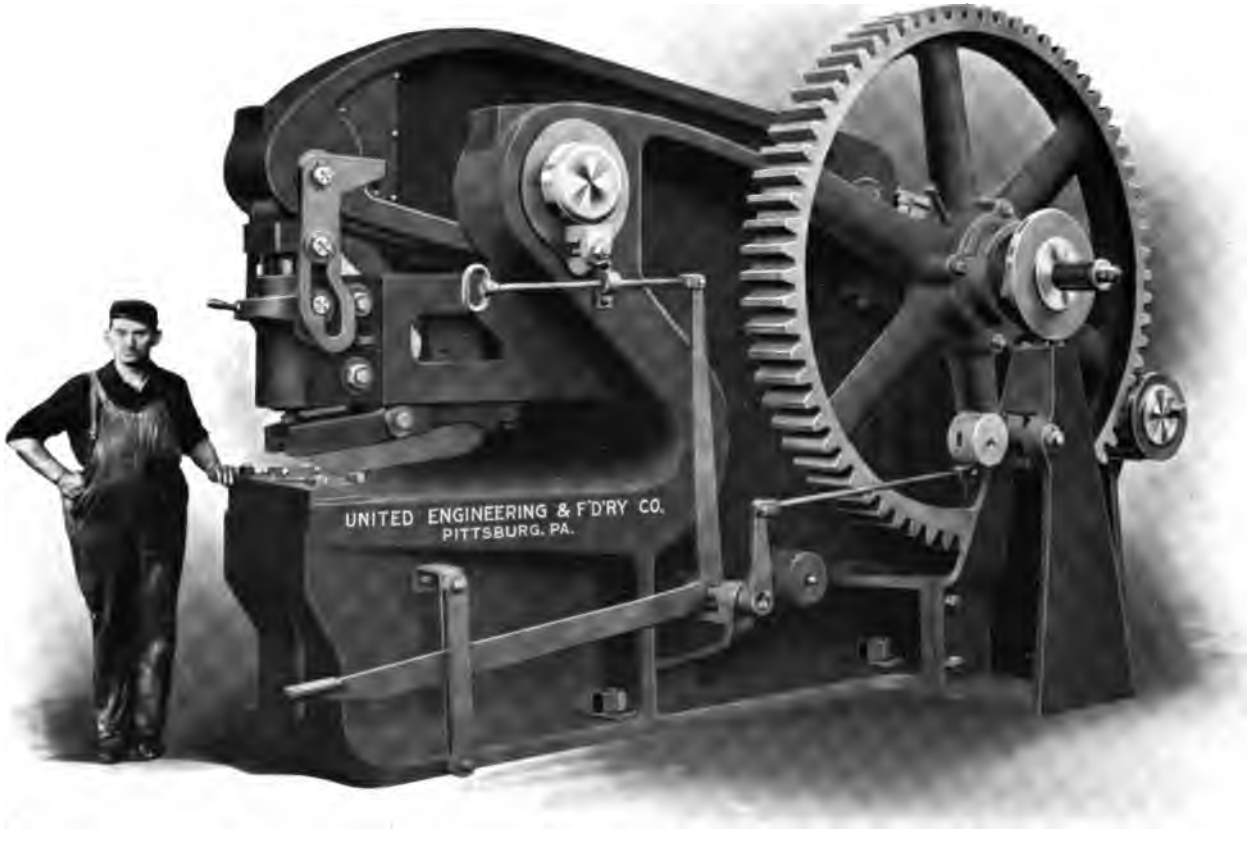


ILLUSTRATION No. 481

No. 4 VERTICAL LEVER PUNCH

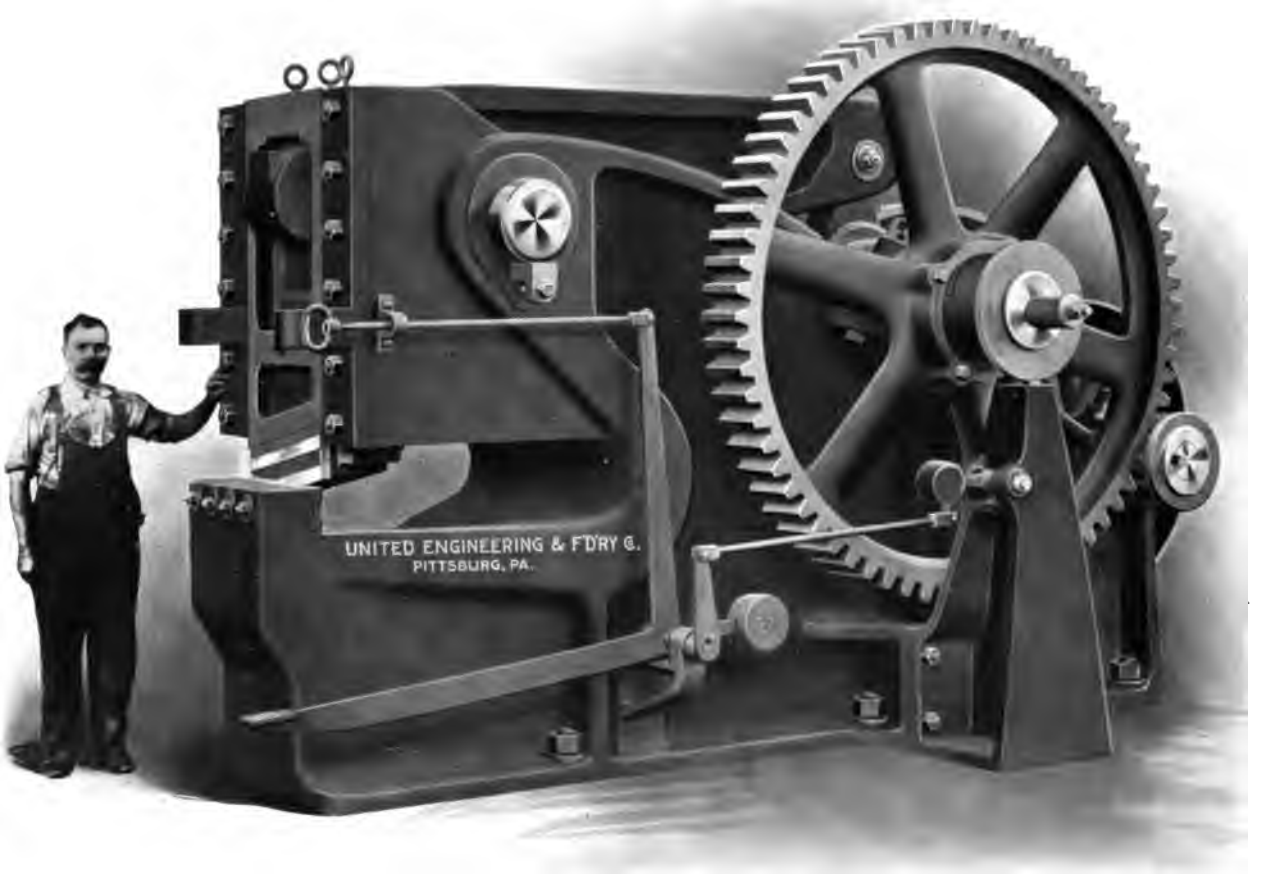


ILLUSTRATION No. 480

No. 4 VERTICAL LEVER SHEAR

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 413

No. 3 RAIL STRAIGHTENING MACHINE

Motor driven

Capacity to straighten up to 100-pound rails.

Weight, with 30 x 4½-inch pulleys, 11,500 pounds.

Weight, with 8 x 8-inch engine, 13,000 pounds.

Weight, with 10 horse-power electric motor, 13,000 pounds.

Floor space, 7 feet 6 inches x 6 feet 4 inches.

Speed, 63 strokes per minute when fly-wheel shaft runs 150 revolutions per minute.

Gearing, 8-inch face; ratio, 2.37 to 1.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 89

No. 4 VERTICAL RAIL STRAIGHTENER

Motor driven

Capacity to straighten any standard "tee" or girder rail.

Weight, with 8 x 36-inch pulleys, 76,000 pounds.

Weight, with 8 x 8-inch engine, 77,000 pounds.

Weight, with 10 horse-power electric motor, 77,000 pounds.

Floor space, 6 feet 6 inches x 8 feet.

Speed, 50 strokes per minute when fly-wheel shaft runs 350 revolutions per minute.

Gearing, 8-inch face; ratio, 7 to 1.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

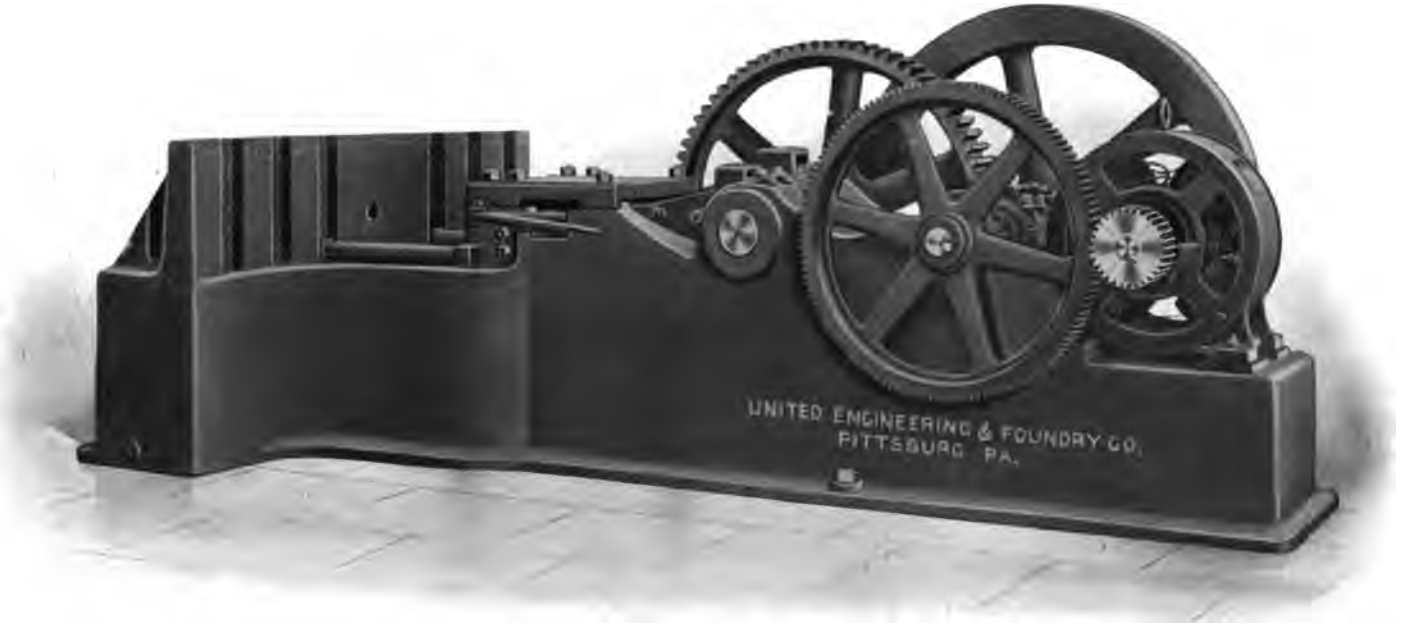


ILLUSTRATION No. 385

HORIZONTAL STRAIGHTENING MACHINE

Motor driven

For beams, channels, rounds, squares, flats, etc.

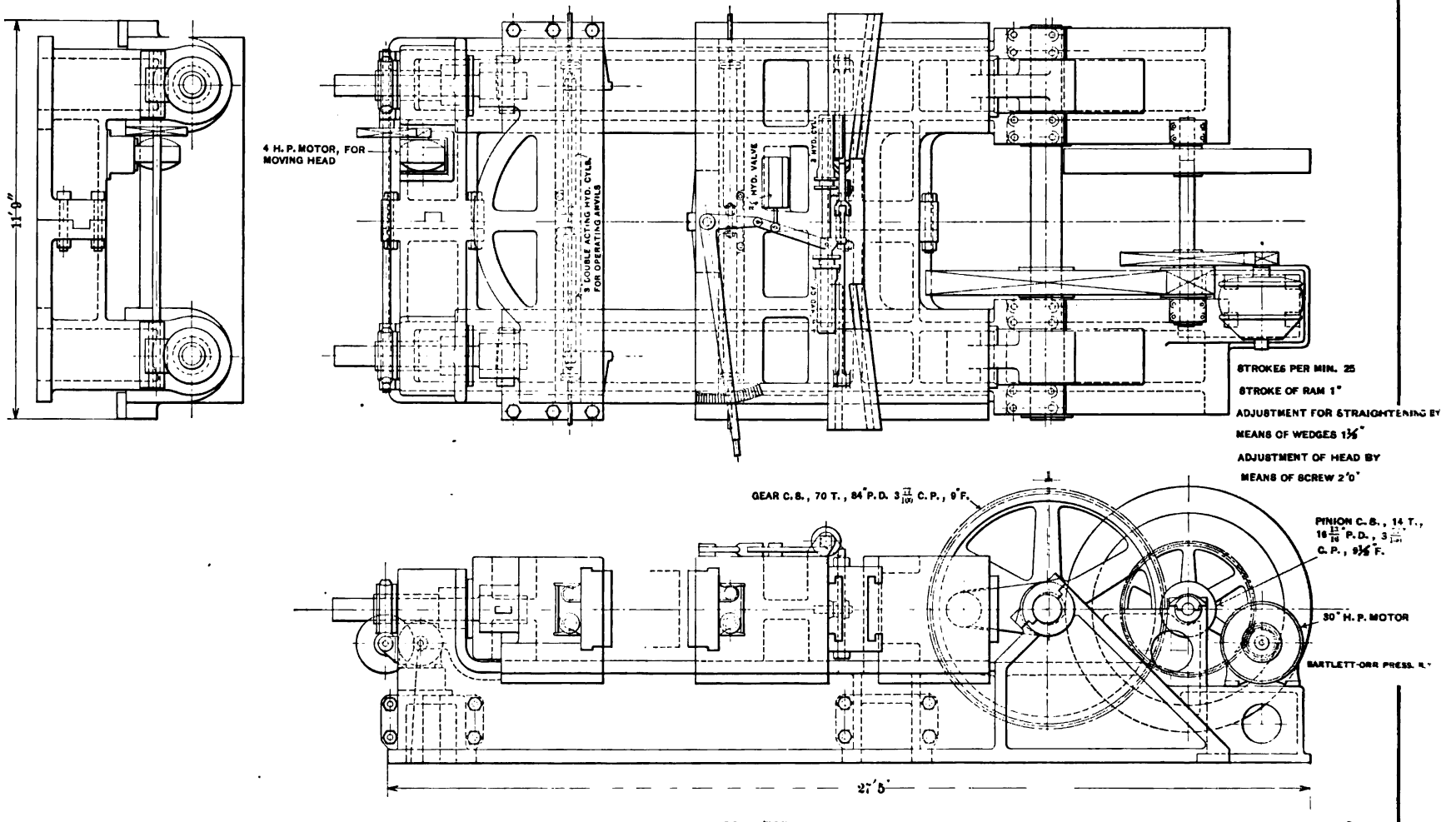

11'-0"
4 H. P. MOTOR, FOR MOVING HEAD
3" DOUBLE ACTING HYD. CYLS. FOR OPERATING ANVILS
3" HYD. VALVE
3" HYD. CYL.
STROKES PER MIN. 25
STROKE OF RAM 1"
ADJUSTMENT FOR STRAIGHTENING BY MEANS OF WEDGES 1⅜"
ADJUSTMENT OF HEAD BY MEANS OF SCREW 2'0"
GEAR C. S., 70 T., 84" P. D. 3 11/101 C. P., 9" F.
PINION C. S., 14 T., 16 13/14" P. D., 3 11/101 C. P., 9⅜" F.
30" H. P. MOTOR
BARTLETT-ORR PRESS. R.
27'5"

ILLUSTRATION NO. 725

HORIZONTAL STRAIGHTENING MACHINE

Patented

For beams, channels, rounds, squares, flats, etc. Equipped with sliding anvil blocks which reverse bending effect without turning over piece being straightened

UNITED ENGINEERING & FOUNDRY COMPANY, PITTSBURG, PA.

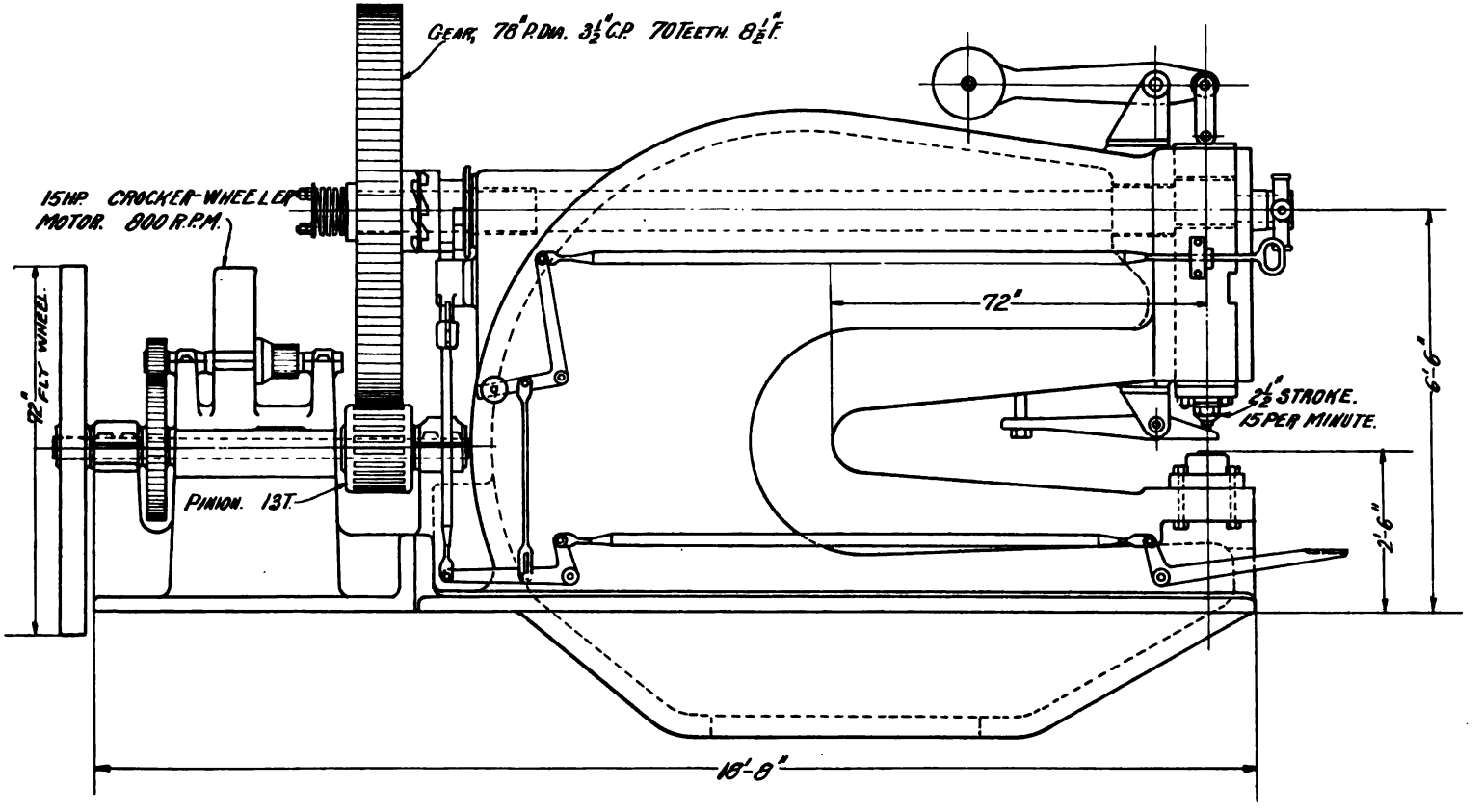


ILLUSTRATION NO. 453

VERTICAL PUNCH

Motor driven

Built in all sizes and for belt, engine or motor drive

UNITED ENGINEERING & FOUNDRY COMPANY. PITTSBURG, PA.

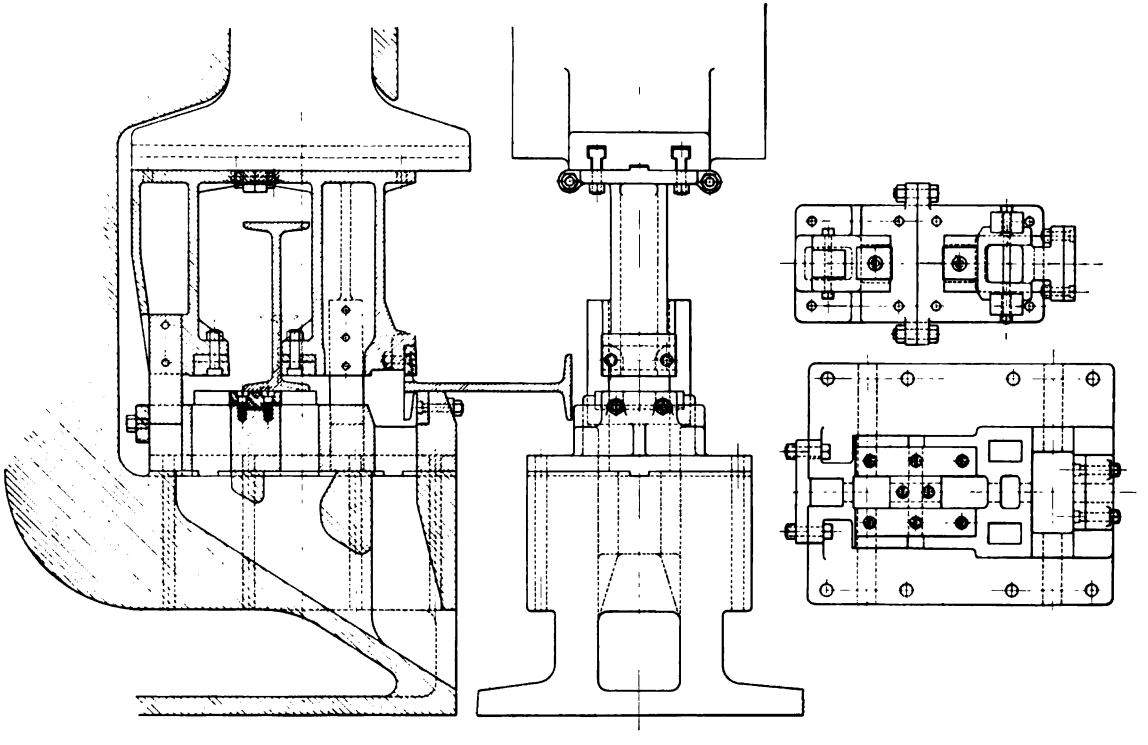


ILLUSTRATION No. 458

DOUBLE NOTCHING AND COPING FIXTURES

For vertical punching, coping and shearing machines

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

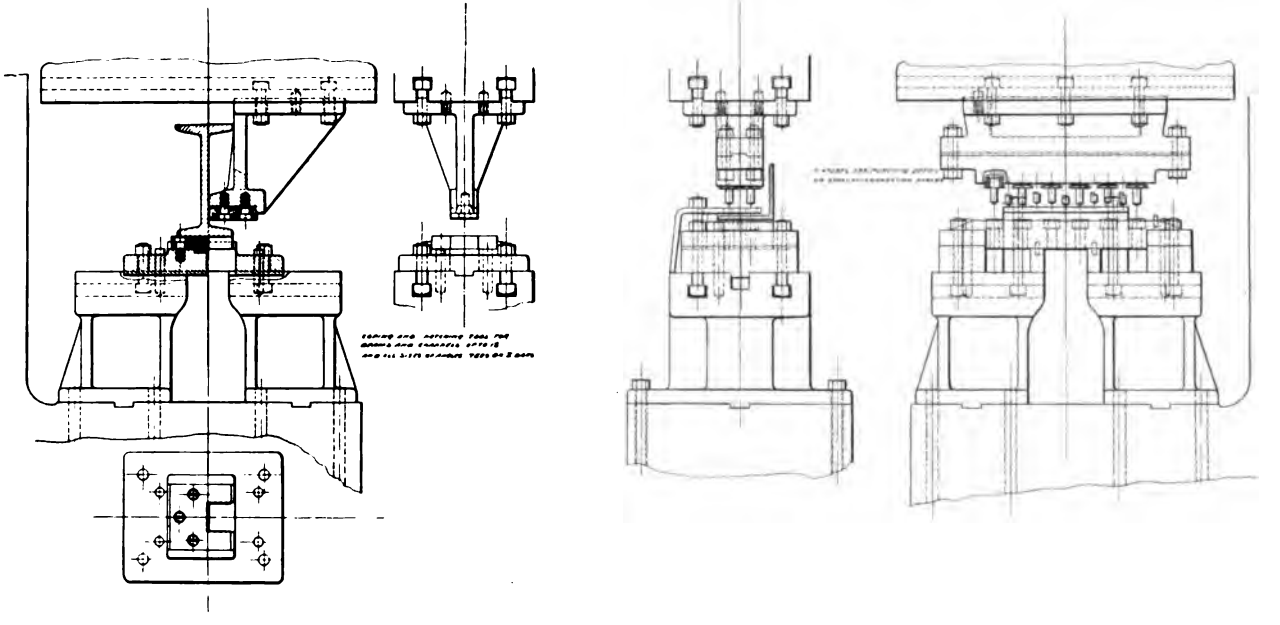


ILLUSTRATION No. 457

NOTCHING, COPING AND PUNCHING FIXTURES

For vertical punching, coping and shearing machines

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

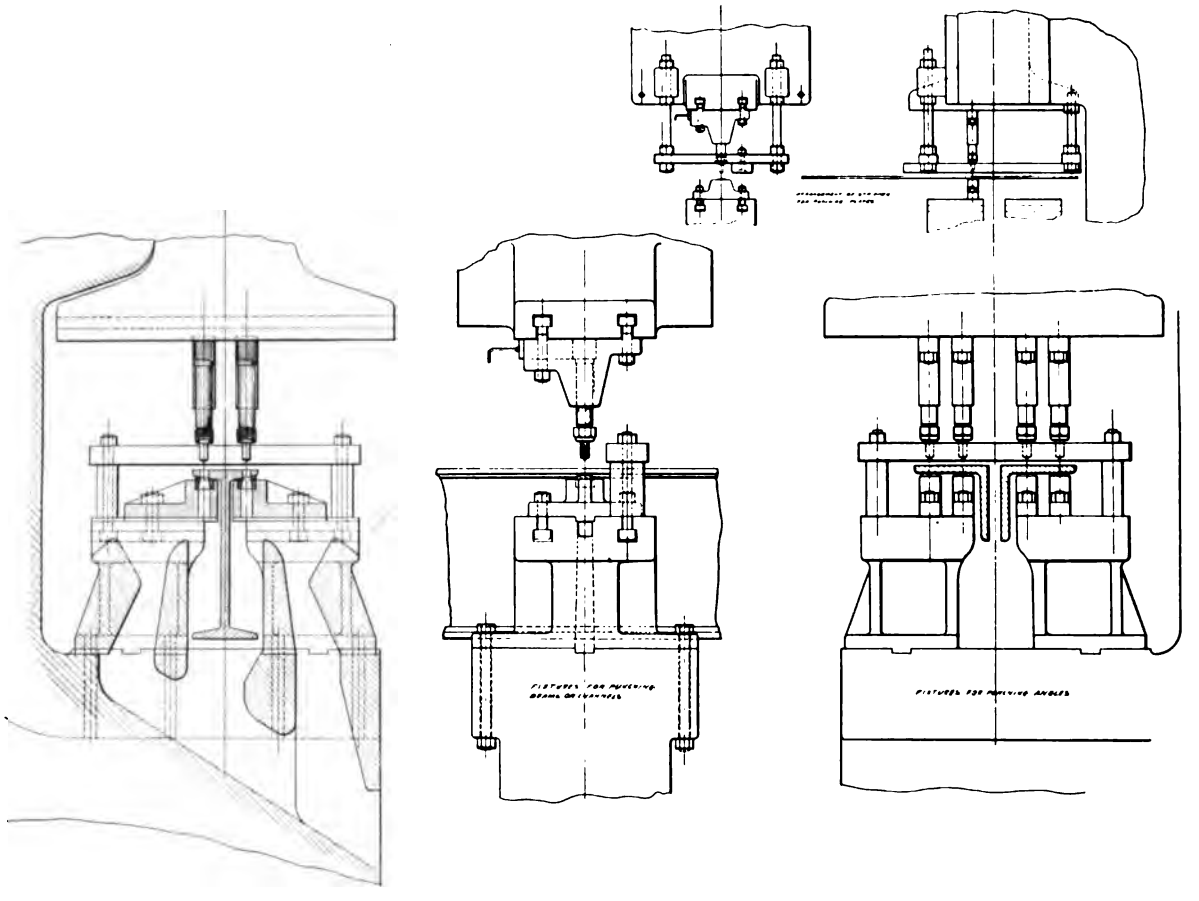
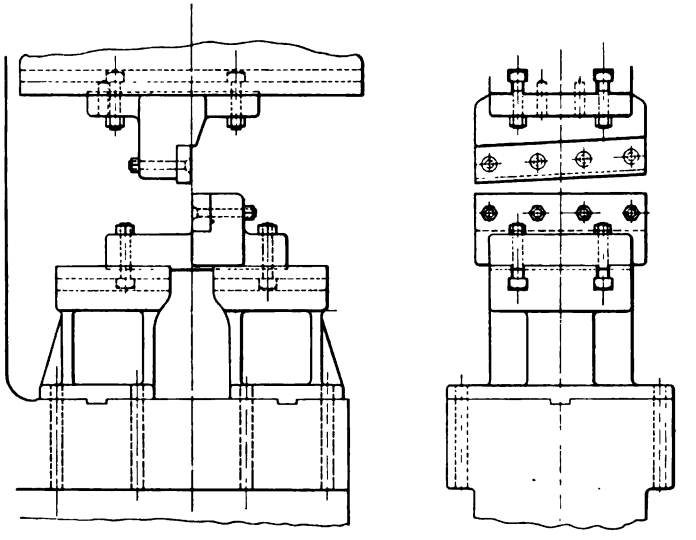


ILLUSTRATION NO. 455

PUNCHING FIXTURES .

For vertical punching, coping and shearing machines

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.



FIXTURES FOR SHEARING

ILLUSTRATION No. 456

SHEARING FIXTURES

For vertical punching, coping and shearing machines

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

HOT AND COLD METAL SAWS

HIGH-SPEED hot and cold metal saws are rapidly coming into common use in rolling mills, displacing slow-speed saws and heavy shearing equipment, especially where there is a large tonnage of material to be handled rapidly, as is the case in structural, rail and sheet bar mills. We build a complete line of these machines, from the lightest type of sliding frame or swinging frame hot saws, driven by 25-horse-power motors, up to the heaviest armor plate saws, driven by 200- or 250-horse-power motors.

The smaller sizes of these machines as shown by Illustrations Nos. 73, 264 A and 264, are suitable for small merchant mill work, such as sawing hot rounds and squares up to 4-inch or 5-inch, and all sizes of flats and small shapes usually rolled on these mills, while Illustrations Nos. 170 A, 170, 428, 428 A, 478 and 479 show high-speed saws that are suitable for large structural mills, rolling beams and channels up to 24-inch, and the larger sizes of angles, tees, squares, rounds, etc. This material can be cut either hot or cold.

Illustrations Nos. 425 and 489 show the tilting frame or drop type of saw. These saws are suitable for rail and sheet bar mills where the product is rolled in long lengths and cut up into short lengths by a group of three to five saws arranged in line and operating in unison. These saws are sometimes mounted on continuous shoe plates which allow them to be moved sidewise, so that different lengths of material can be cut. The feeding mechanism is usually controlled

by one pressure cylinder or motor, connected up by means of line shafting to each saw. We also use the type of saw shown by Illustration No. 264 for this purpose where space is limited, as it occupies less room than the tilting saw.

Illustration No. 494 shows a type of saw which we build for forge shop work and is suitable for sawing hot forging blooms up to 12 inches square .20 to .30 carbon. This saw is also shown by Illustrations Nos. 170 A and 170, with the exception that it has a movable roller table, while the latter has a movable plate. In these saws the saw frame is stationary, while the material to be cut is carried on the movable plate or roller table and moved against the saw by means of either a pressure cylinder or electric motor.

The largest type of saw we build is shown by Illustration No. 101 and is used for cutting heavy plates up to 8 inches thick. This saw is operated in connection with a movable plate working similar to a planer bed.

In all of our saws the bed plates and saw frames are of massive construction, so as to insure ample strength and to reduce vibration to a minimum. The saw arbors are of nickel steel forgings and run in ring oiling water-cooled bearings, with removable brass shells, babbitted. The belt pulleys are cast-steel, of ample size, while the fly-wheels and saw clamps are O. H. steel forgings. The saw blades are made of flange steel plates, the outer edge having teeth for hot sawing and a plain disk with a nickel edge when used as a cold saw. As a rule the saws are entirely self-contained, the motor being carried on the sliding or tilting frame, thus eliminating countershafts, separate bed plates, etc.

We build other types of saws than those illustrated here, such as the underground types, where conditions demand a special arrangement for the drive or feeding mechanism; and we are prepared to figure on anything in this line.

ILLUSTRATION No. 623

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

42-INCH SLIDING FRAME HOT SAW

Used in connection with small merchant mill

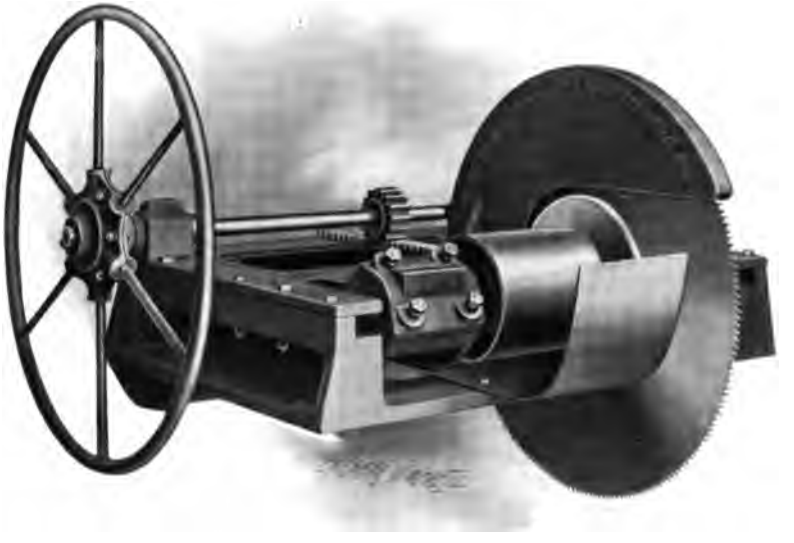


ILLUSTRATION No. 73

42-INCH SLIDING FRAME HOT SAW

Belt driven

Capacity up to 4-inch round. Stroke, 14 inches. Hand power feed

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 264 A

SWINGING FRAME HOT SAW

Belt driven. Capacity up to 4-inch round. Hand feed

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 264

SWINGING FRAME HOT SAW

Motor driven. Capacity up to 4-inch round. Hand feed

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 170 A

42-INCH SLIDING COLD-SAW

Another view of Illustration No. 170

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 170

42-INCH SLIDING COLD SAW

Belt driven

Capacity, 7-inch round or 20-inch beams and channels. Stroke, 30 inches. Hydraulic feed

UNITED ENGINEERING & FOUNDRY COMPANY.
PITTSBURG, PA.

ILLUSTRATION No. 480

42-INCH DROP SAW

Motor driven

Suitable for rail, sheet bar and light structural mills

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

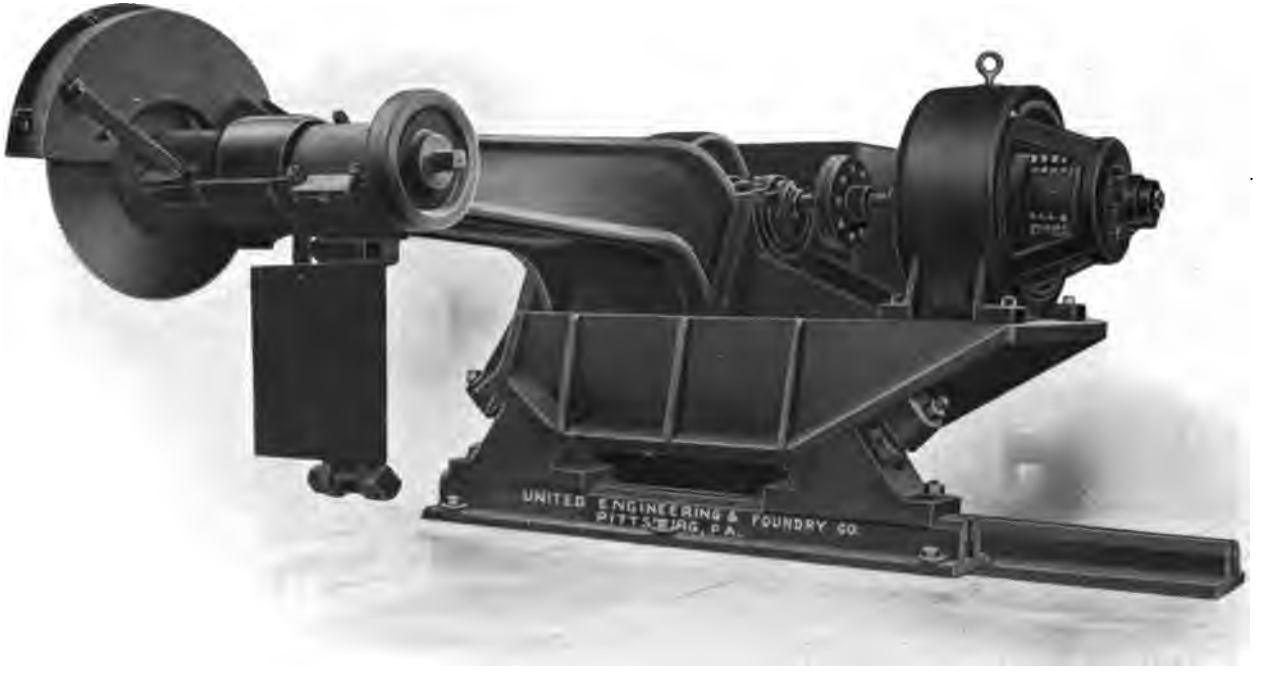


ILLUSTRATION No. 425

42-INCH DROP HOT SAW

Motor driven

Suitable for rail, sheet bar and light structural mills

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

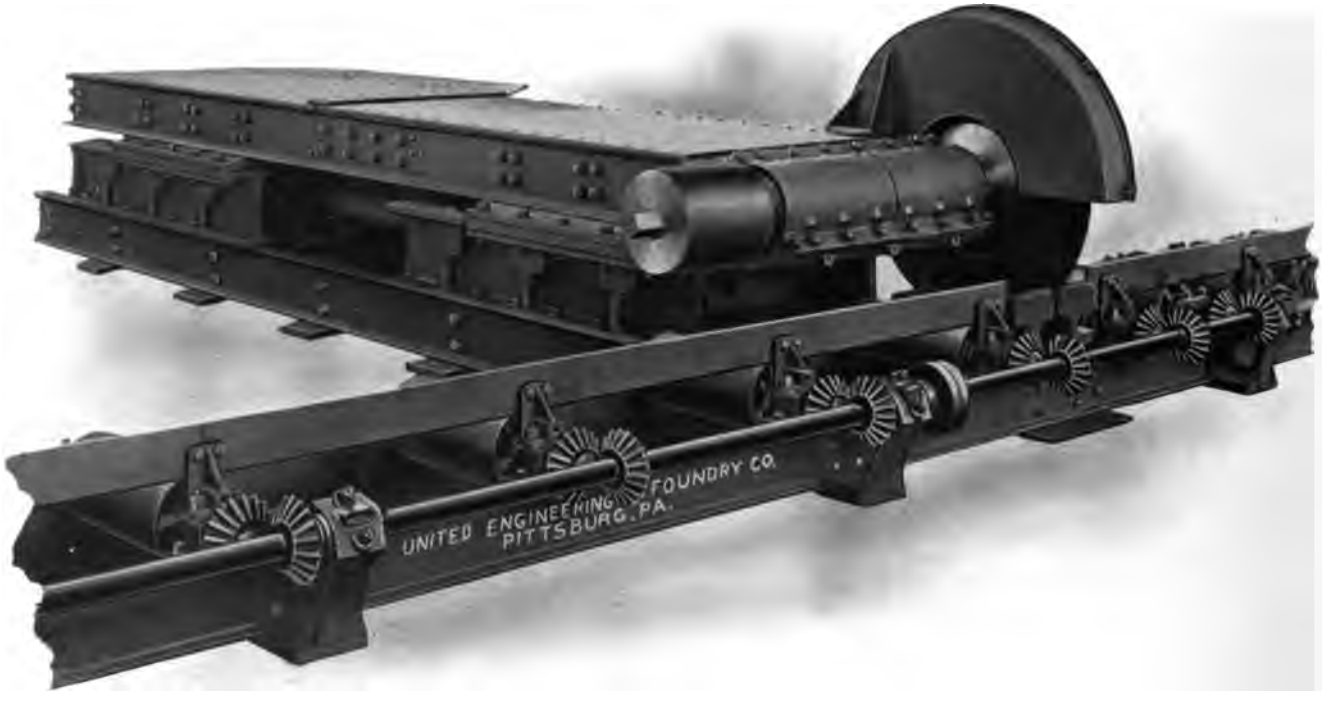


ILLUSTRATION No. 428 A

48-INCH SLIDING FRAME COLD SAW

With roller table

Suitable for large merchant and structural mills

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

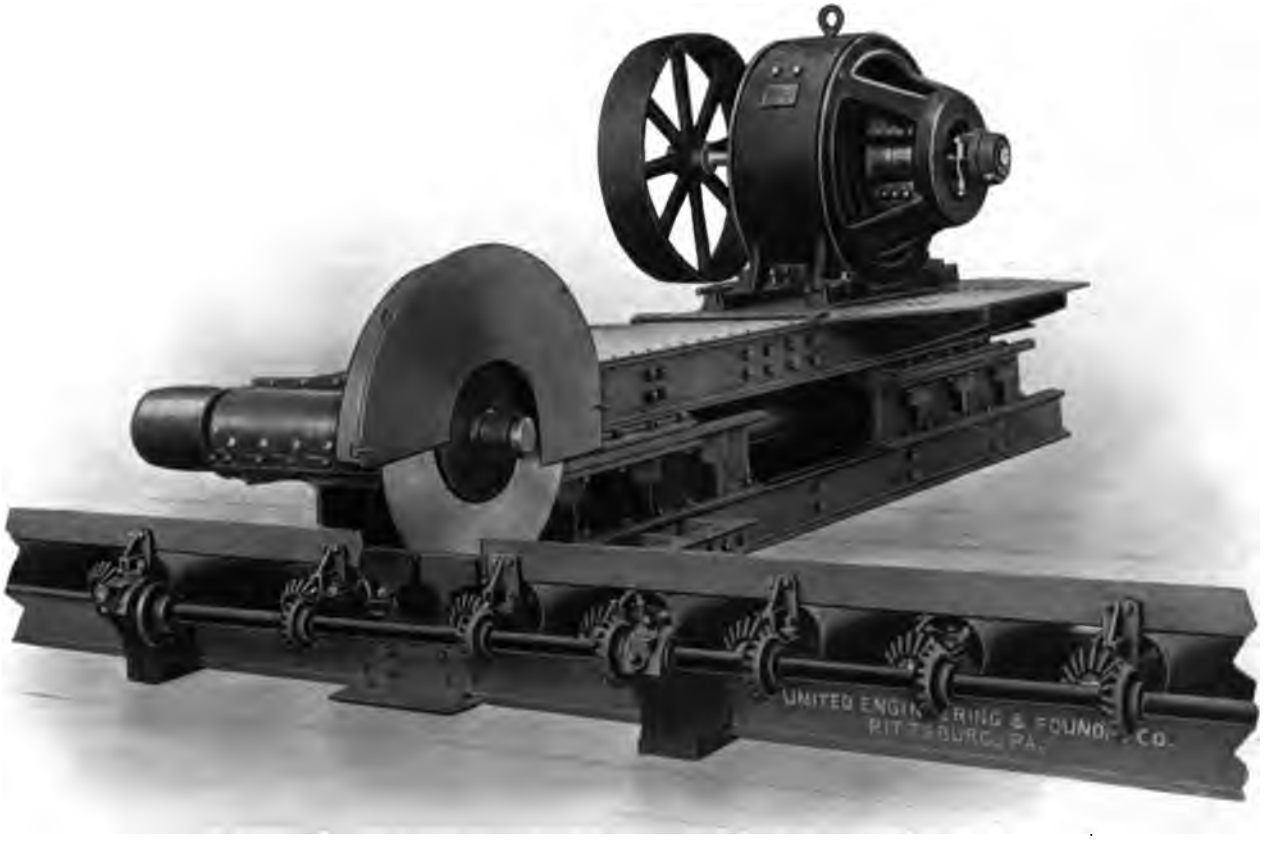


ILLUSTRATION No. 428

48-INCH SLIDING FRAME COLD SAW

Motor driven

Suitable for large merchant and structural mills

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

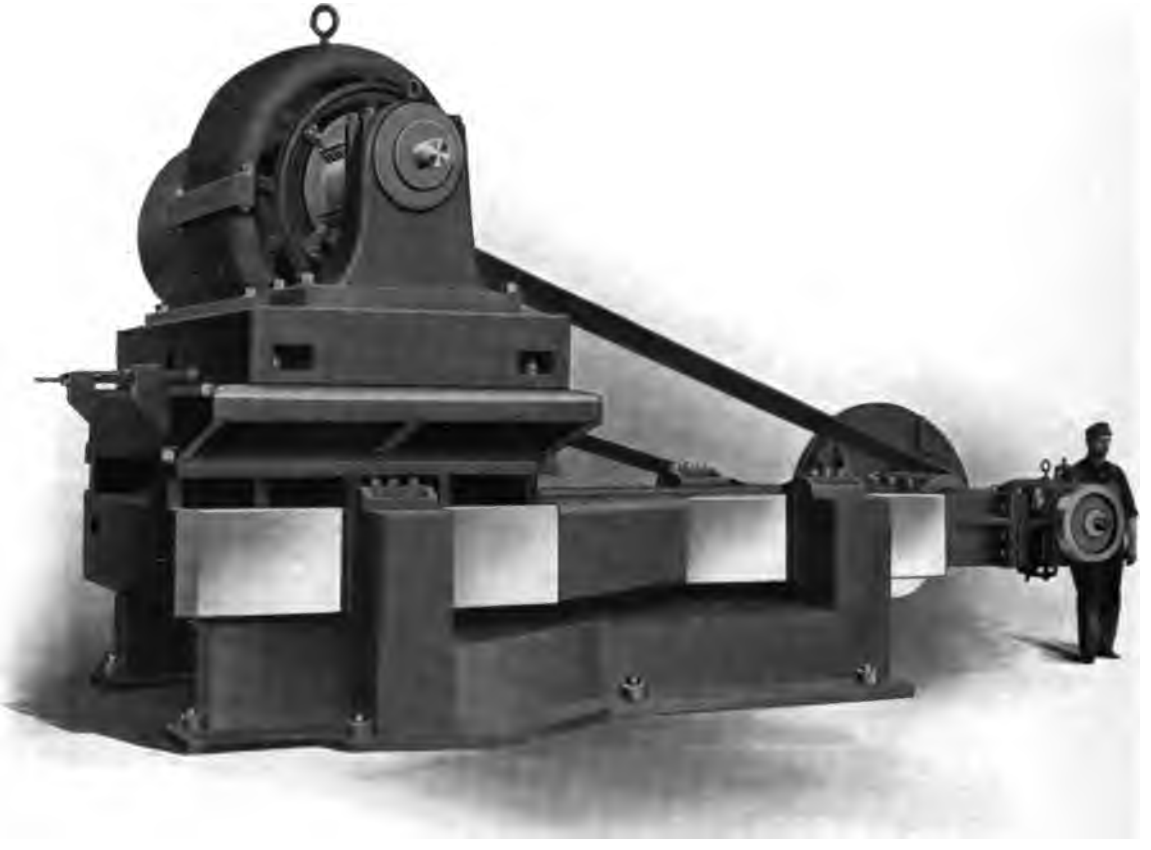


ILLUSTRATION No. 479

54-INCH SLIDING FRAME SAW

Motor driven

Suitable for large merchant and structural mills

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

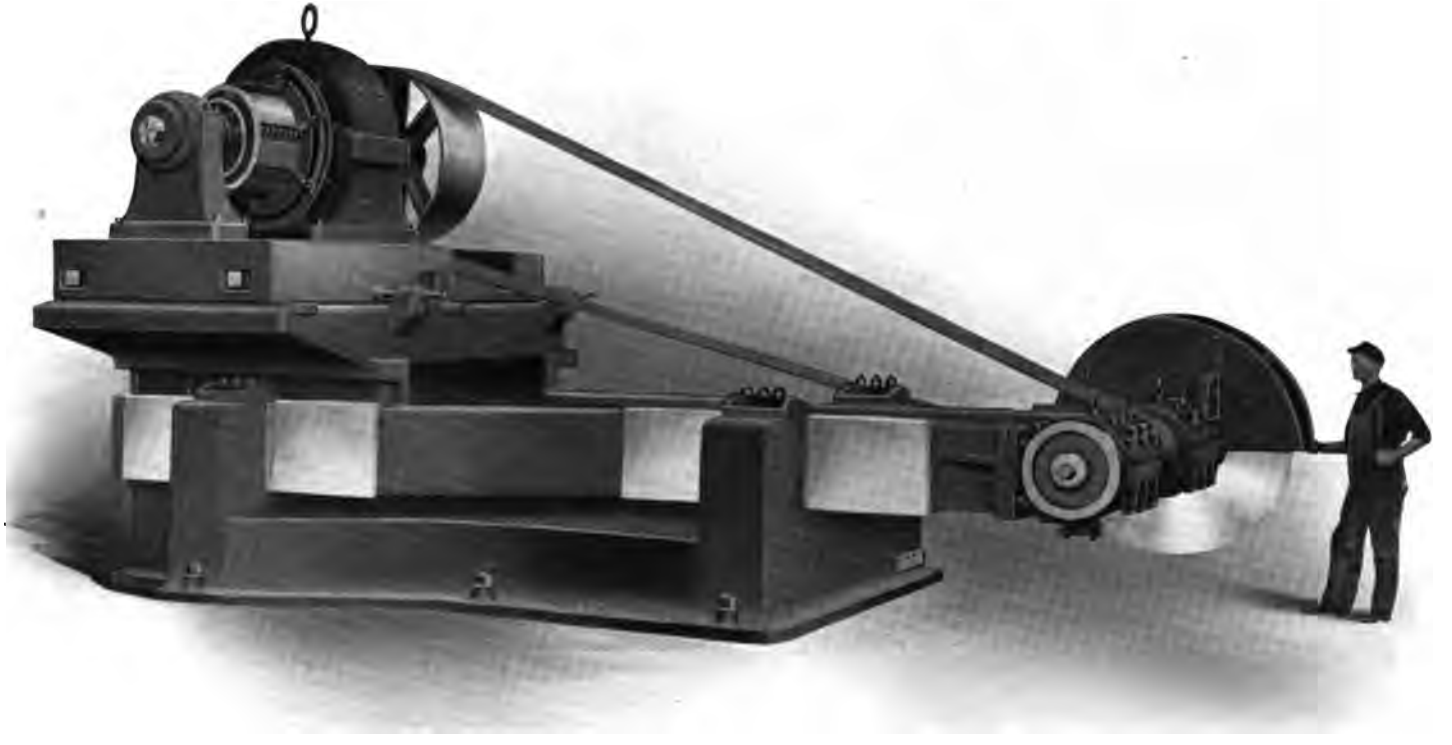


ILLUSTRATION No. 478

54-INCH SLIDING FRAME SAW

Motor driven

Another view of Illustration No. 479

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

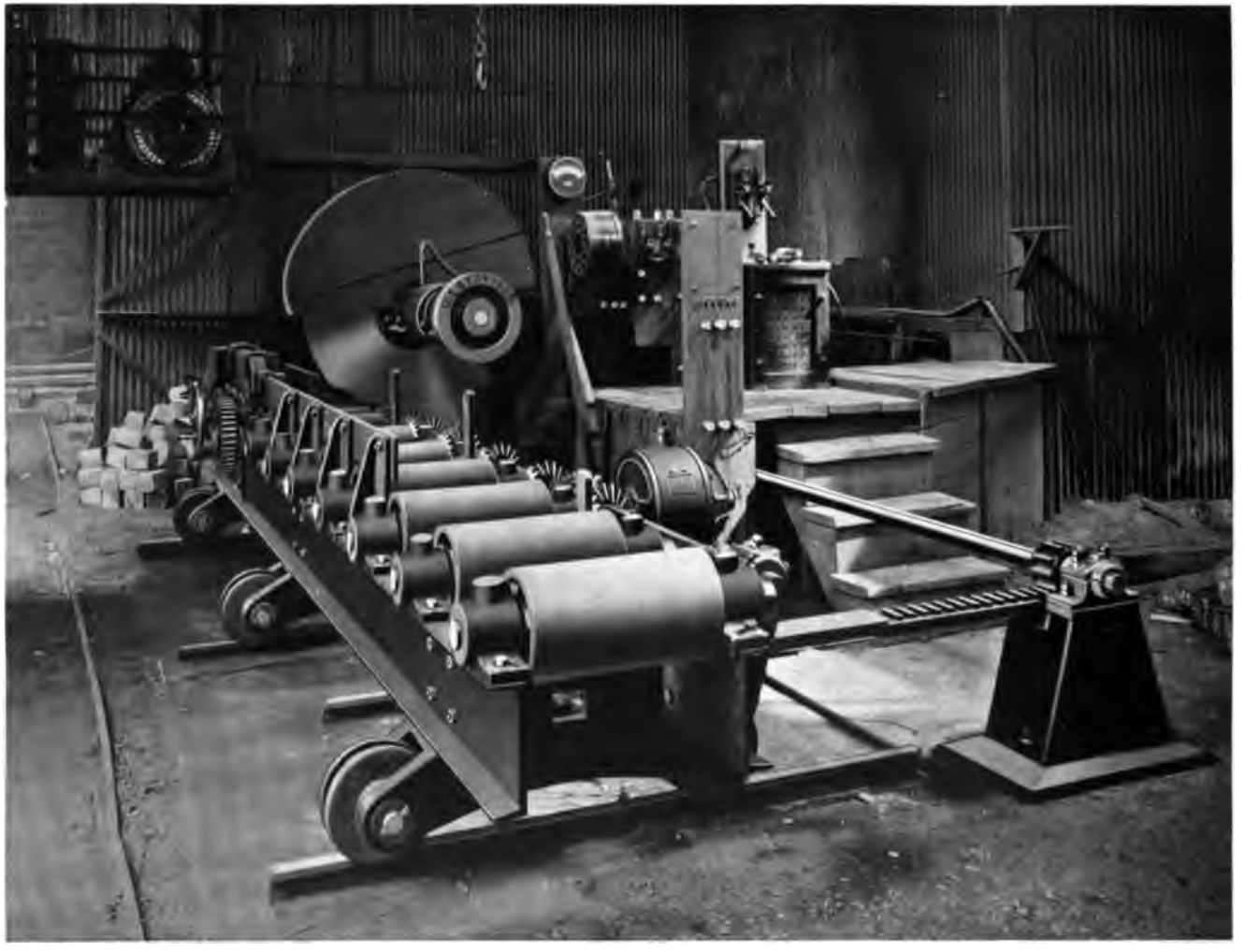


ILLUSTRATION No. 494

54-INCH HOT SAW

Motor driven. Arranged with movable feed roller table. Capacity up to 12-inch hot blooms

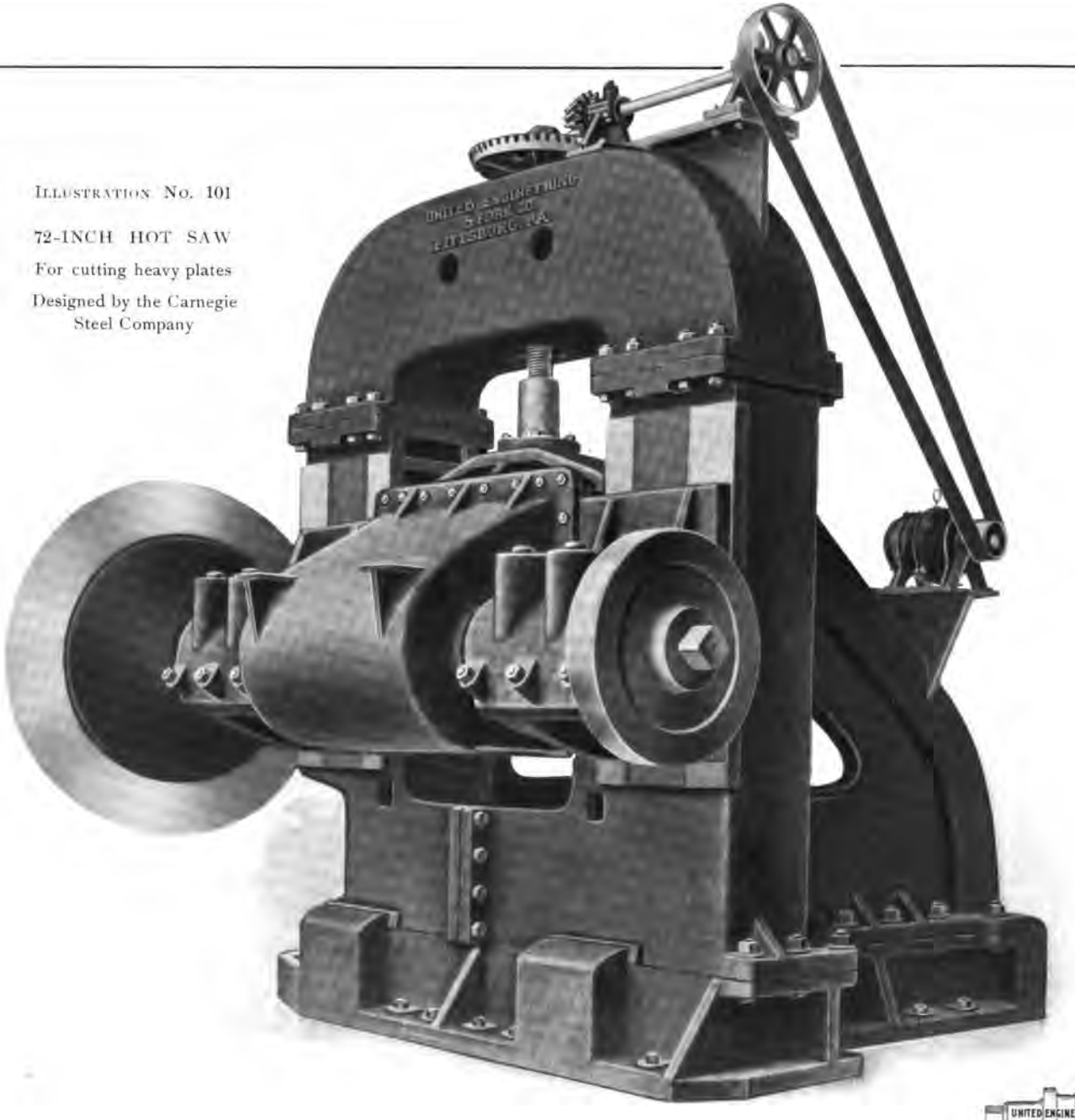
UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 101

72-INCH HOT SAW

For cutting heavy plates

Designed by the Carnegie Steel Company



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 515

54-INCH SLIDING FRAME SAW

Duquesne Works, Carnegie Steel Company

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

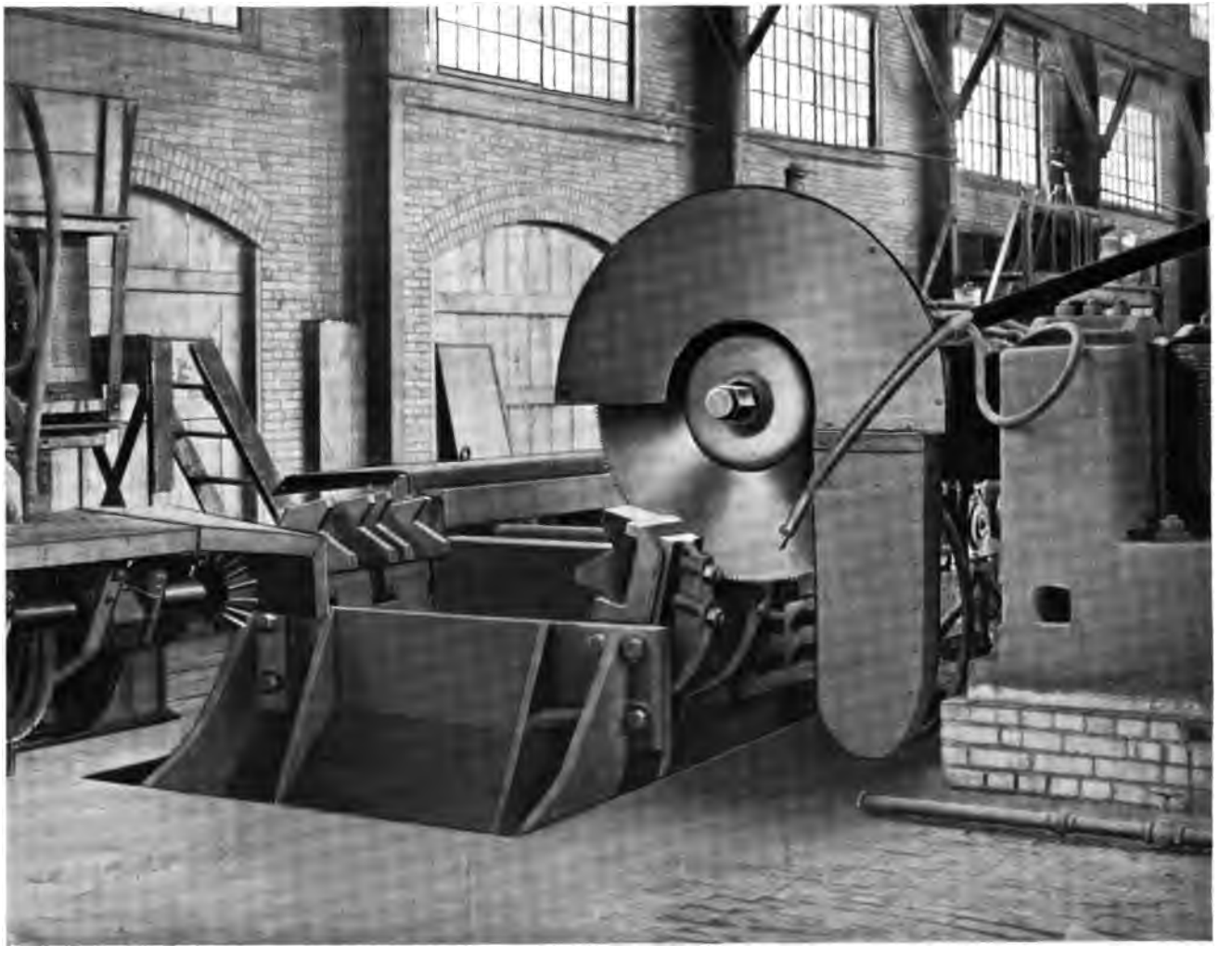


ILLUSTRATION No. 516

CLAMPING DEVICE FOR SLIDING FRAME SAW

Operated by pressure cylinders

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ROLL TURNING LATHES

GREAT power, massive construction, smoothness and convenience of operation are the essential qualities embodied in our roll turning lathes, together with simple and correct mechanical construction and excellence of workmanship, they having been designed and new patterns made after years of experience in the use and building of lathes. We manufacture them in various sizes ranging from 16 to 60 inches, which designate the size of roll or collar that will swing over the necking rest plate, or between the piano rest and center. These lathes are furnished with either belt or direct-connected electric motor drive. A variable-speed motor with either gear or chain connection can be used, or a single-speed motor with variable-speed change gears.

The general construction of all sizes is similar. The two sides of the beds are box section to secure great stiffness. The headstock is cast in one piece, and is made extraordinarily heavy to resist vibration. The main shaft has a taper fit in the front end of the head and extends to the rear end. All the gear wheels are keyed to their respective shafts, excepting the internal face wheel, which is a running fit with bronze bushing on the dead spindle. This construction is very desirable, as most lathes are built with the intermediate gear loose on its shaft, which after a short time causes a chatter. The housings, piano rest, tailstock and necking rest are convenient and heavy.

We furnish five different designs of housings for our lathes, adapted for topping or crossing rolls. These housings are made either of the open or gooseneck type.

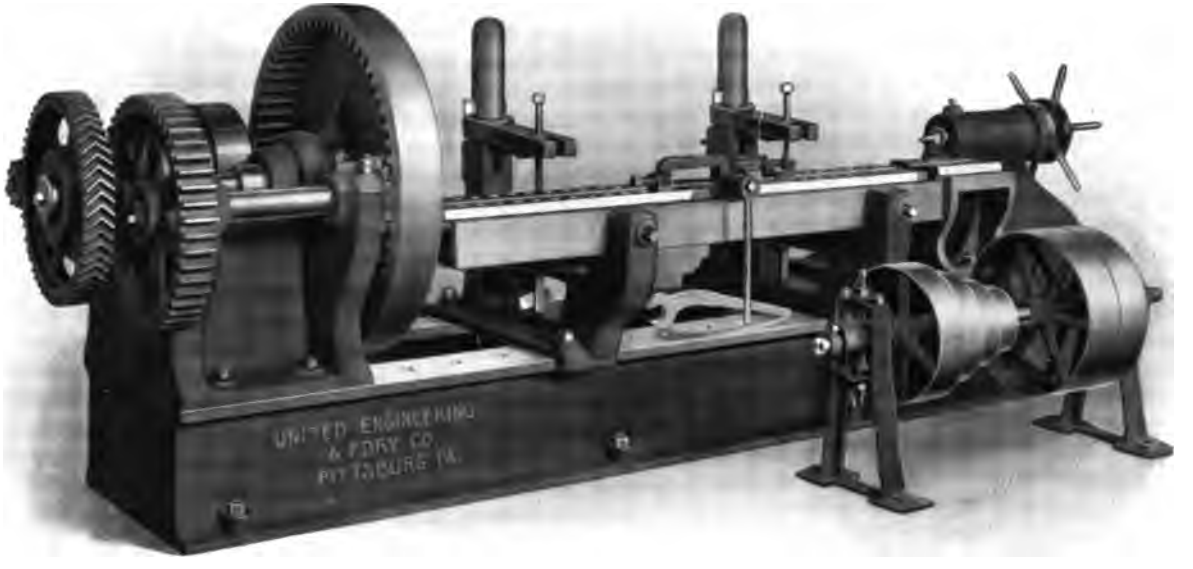


ILLUSTRATION No. 166

16-INCH ROLL TURNING LATHE

Belt driven

This lathe is suitable for guide and bar rolls for 12-inch trains and under.
Ratio of gearing, 88 to 1.
Face plate runs 1 to 4.9 revolutions per minute.
Cones have four steps, 8 to 16 inches in diameter, for 4-inch belt.
Usual length of bed, 12 feet.
Weight, 10,500 pounds.
Size of motor for electric drive, 5 horse-power.
Floor space, 4 x 13 feet, when belt driven.

UNITED ENGINEERING & FOUNDRY COMPANY. PITTSBURG, PA.

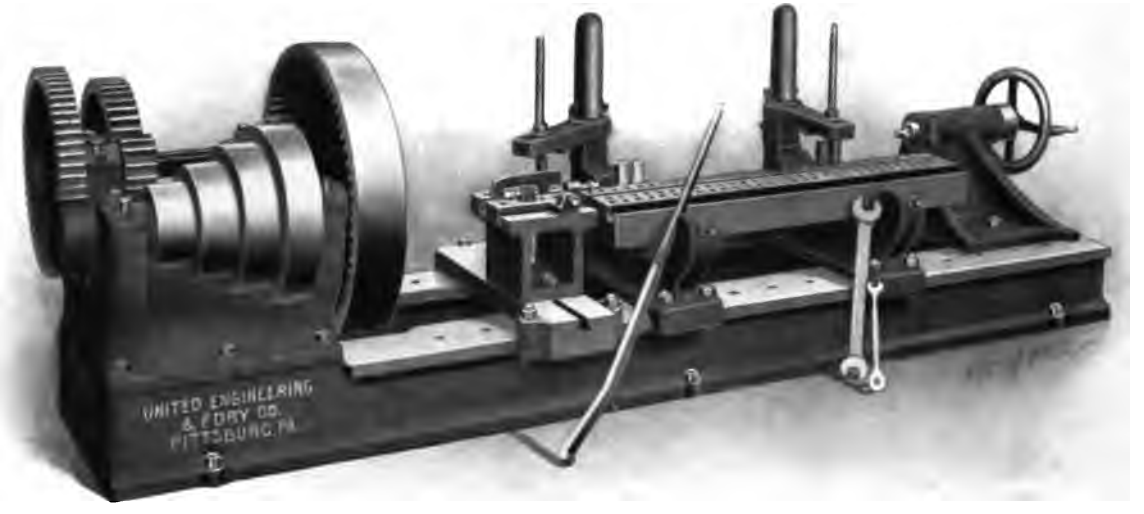


ILLUSTRATION NO. 76 A

18-INCH ROLL TURNING LATHE

Belt driven

This lathe is suitable for guide and bar rolls for 14-inch trains and under.
Ratio of gearing, 87 to 1.
Face plate runs 1 to 4.9 revolutions per minute.
Cones have four steps, 10 to 22 inches in diameter, for 4-inch belt.
Usual length of bed, 13 feet.
Weight, 11,500 pounds.
Size of motor for electric drive, 5 horse-power.
Floor space, 4 x 13 feet, when belt driven.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

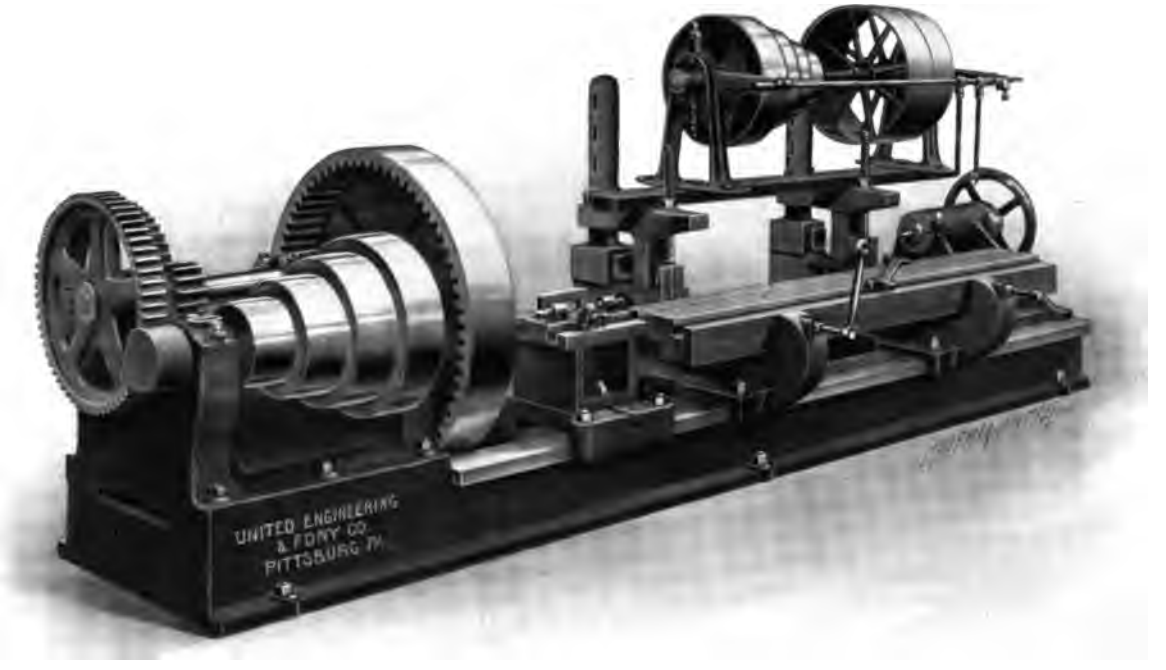


ILLUSTRATION No. 85

26-INCH ROLL TURNING LATHE

Belt driven

This lathe is suitable for guide and bar rolls for 20-inch trains and under.
Ratio of gearing, 113 to 1.
Face plate runs .7 to 3.75 revolutions per minute.
Cones have four steps, 10 to 22 inches in diameter, for 5-inch belt.
Usual length of bed, 15 feet.
Weight, 16,000 pounds.
Size of motor for electric drive, 5 horse-power.
Floor space, 3 feet 3 inches x 16 feet, when belt driven.

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PITTSBURG, PA.

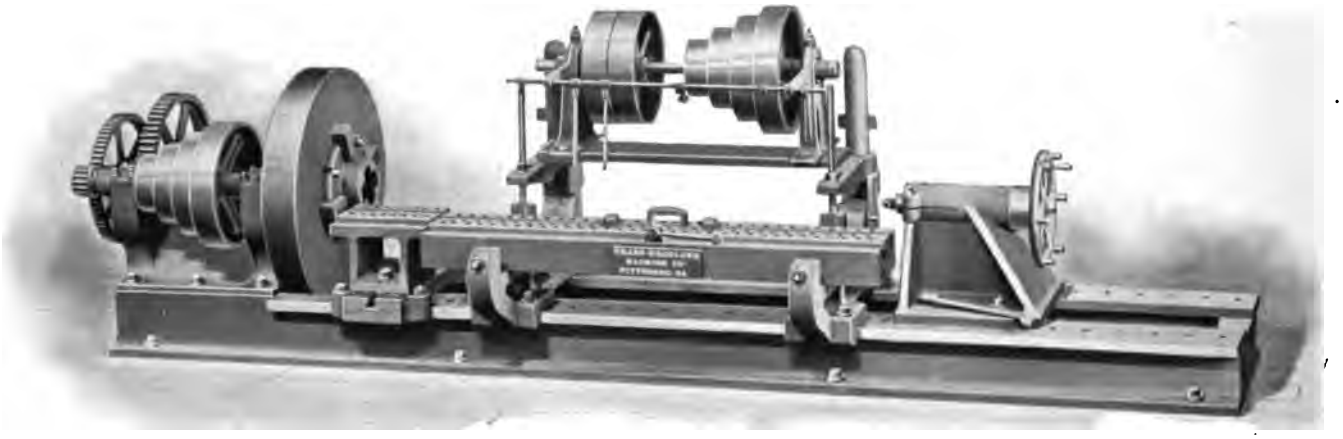

ILLUSTRATION No. 112

34-INCH ROLL TURNING LATHE

Belt driven

This lathe is suitable for bar, tin and skelp rolls for 24-inch trains and under.
Ratio of gearing, 113 to 1.
Face plate runs .5 to 2.5 revolutions per minute.
Cones have four steps, 12 to 27 inches in diameter, for 5-inch belt.
Usual length of bed, 20 feet.
Weight, 26,000 pounds.
Size of motor for electric drive, 10 horse-power.
Floor space, 5 feet 6 inches x 21 feet, when belt driven.

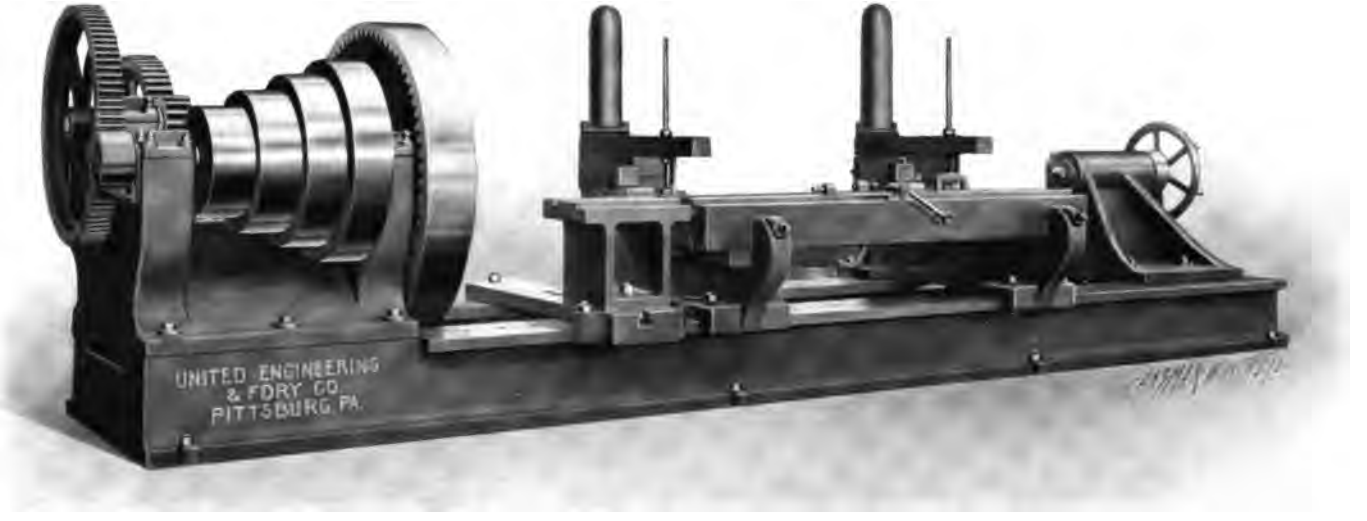

ILLUSTRATION No. 61 A

44-INCH ROLL TURNING LATHE

Belt driven

This lathe is suitable for sheet, plate, rail and structural rolls for 30-inch trains and under.
Ratio of gearing, 155 to 1.
Face plate runs .5 to 1.4 revolutions per minute.
Cones have four steps, 17 to 32 inches in diameter, for 6-inch belt.
Usual length of bed, 20 feet.
Weight, 42,000 pounds.
Size of motor for electric drive, 15 horse-power.
Floor space, 6 x 21 feet, when belt driven.

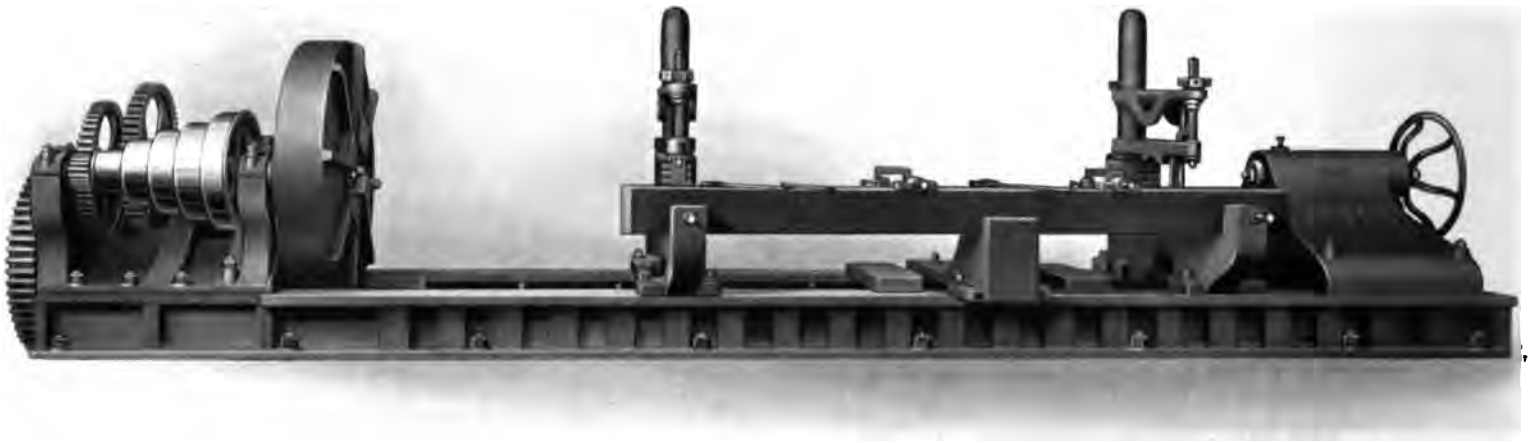

ILLUSTRATION No. 783

50-INCH ROLL TURNING LATHE

Belt driven

This lathe is suitable for large plate, beam or blooming mill rolls for 48-inch trains and under.
Ratio of gearing, 275 to 1.
Face plate runs .4 to 2.2 revolutions per minute.
Cones have five steps, 11½ to 28 inches in diameter, for 6-inch belt.
Usual length of bed, 30 feet.
Weight, 65,000 pounds.
Size of motor for electric drive, 15 horse-power.
Floor space, 8 x 25 feet, when belt driven.

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PITTSBURG, PA

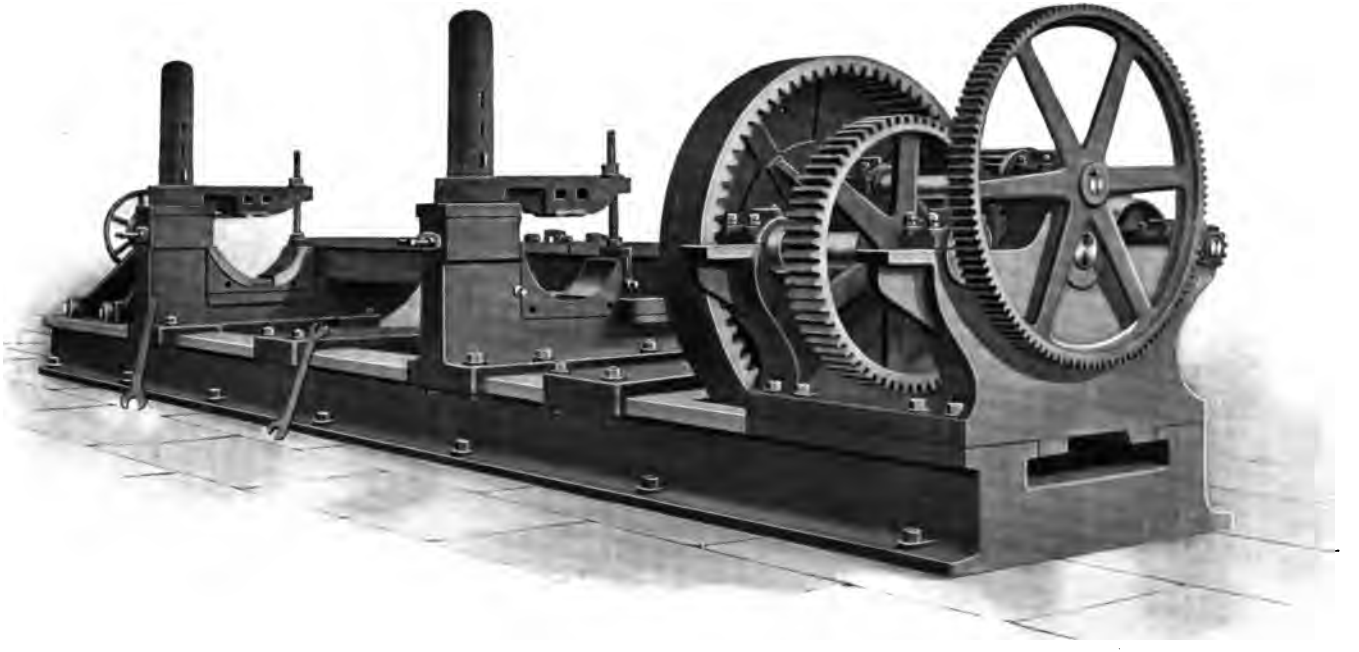


ILLUSTRATION No. 178

60-INCH ROLL TURNING LATHE

Belt driven

This lathe is suitable for large plate, beam, armor or blooming mill rolls for 48-inch trains and under.
Ratio of gearing, 202 to 1.
Face plate runs .5 to 2.3 revolutions per minute.
Cones have five steps, 17 to 37 inches in diameter, for 6-inch belt.
Usual length of bed, 30 feet.
Weight, 82,000 pounds.
Size of motor for electric drive, 20 horse-power.
Floor space, 8 x 31 feet, when belt driven.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ROLL TURNING LATHE

WITH VARIABLE-SPEED MOTOR DRIVE

THIS lathe is driven by a direct-connected variable-speed motor. The motor base and controller bracket are attached to the lathe bed, making the entire lathe self-contained. The illustrations show the general design of these lathes and also the simplicity of their construction. The motor being arranged in front does not interfere with the operator and also allows easy access to the driving gears and bearings in the headstock. The controller is arranged so as to be convenient to the operator and gives him perfect control over the speed at all times.

The variable-speed type of motor allows of a speed variation of one to four on a single voltage. Variation in speed is obtained by changing the resistance in the field and consequently the current in same. This method is convenient and economical in operation and of low cost. A large number of speeds can be obtained and the controlling current, that in the field, is small, which also avoids expensive wiring. This type of motor is of simple construction, requiring no more care and is as well recommended by the manufacturers as the single-speed motor.

The lathe bed, housings, tailstock, etc., are of the same design as for belt or change gear drive, the only difference being in the headstock, which is as simple in construction as with the belt drive, the number of gear reductions being about the same.

These lathes are built in all of our standard sizes.

ILLUSTRATION No. 672

18-INCH ROLL TURNING LATHE

Driven by variable-speed motor

This lathe is suitable for guide and bar rolls for 14-inch trains and under.
Face plate runs 1 to 4 revolutions per minute.
Size of electric motor, 5 horse-power.
Usual length of bed, 13 feet.
Floor space, 6 feet 4 inches x 14 feet.
Weight, complete, 13,000 pounds.

We also build a 26-inch roll turning lathe (driven by variable-speed motor) which has the following dimensions:

Face plate runs .7 to 2.8 revolutions per minute.
Size of electric motor, 5 horse-power.
Usual length of bed, 15 feet.
Floor space, 6 feet 6 inches x 16 feet.
Weight, complete, 20,000 pounds.
This lathe is suitable for guide and bar rolls for 20-inch trains and under.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

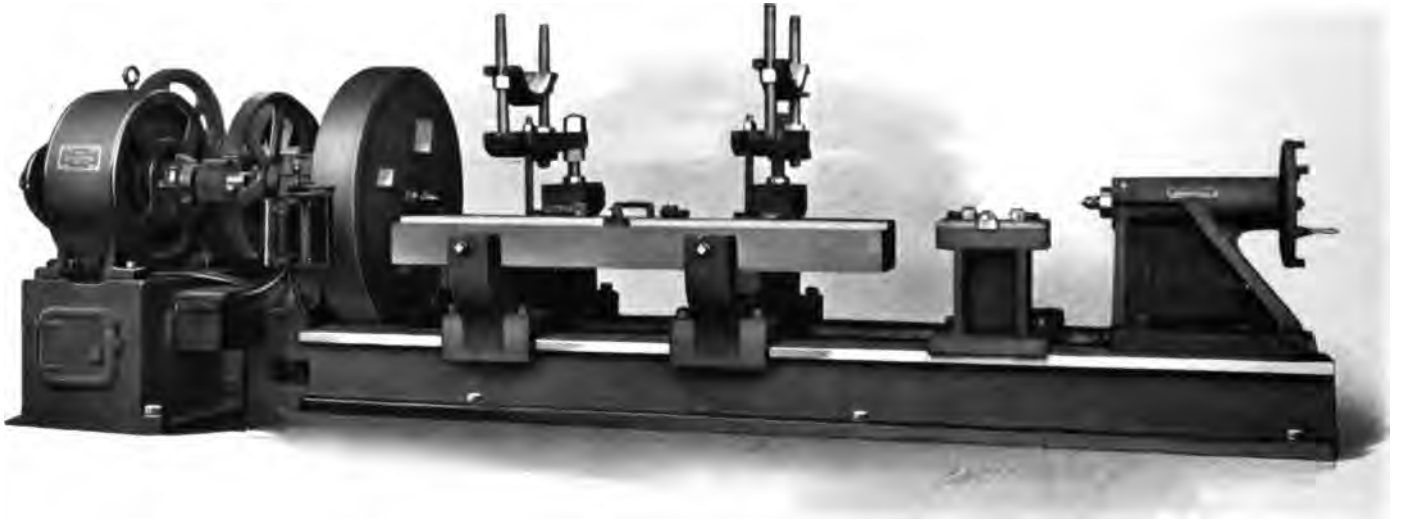


ILLUSTRATION NO. 793

34-INCH ROLL TURNING LATHE

Driven by variable-speed motor

This lathe is suitable for bar, tin and skelp rolls for 24-inch trains and under.
Face plate runs ½ to 2 revolutions per minute.
Size of electric motor, 10 horse-power.
Usual length of bed, 20 feet.
Floor space, 6 feet 6 inches x 21 feet.
Weight, complete, 29,000 pounds.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

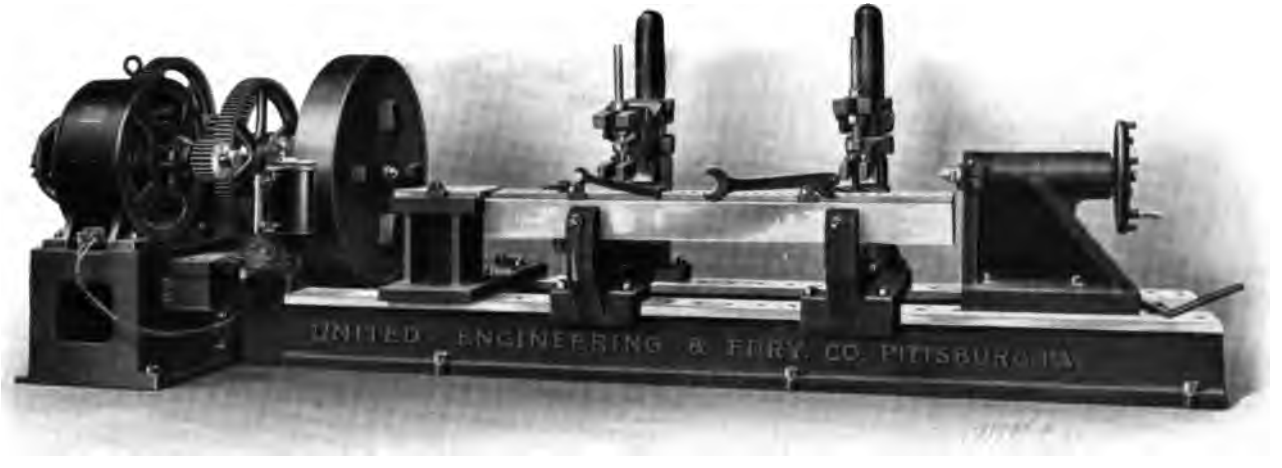


ILLUSTRATION No. 499

44-INCH ROLL TURNING LATHE

Driven by variable-speed motor

This lathe is suitable for sheet, rail, plate and structural rolls for 30-inch trains and under.
Face plate runs ½ to 2 revolutions per minute.
Size of electric motor, 15 horse-power.
Usual length of bed, 20 feet.
Floor space, 8 feet 6 inches x 21 feet.
Weight, complete, 45,000 pounds.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

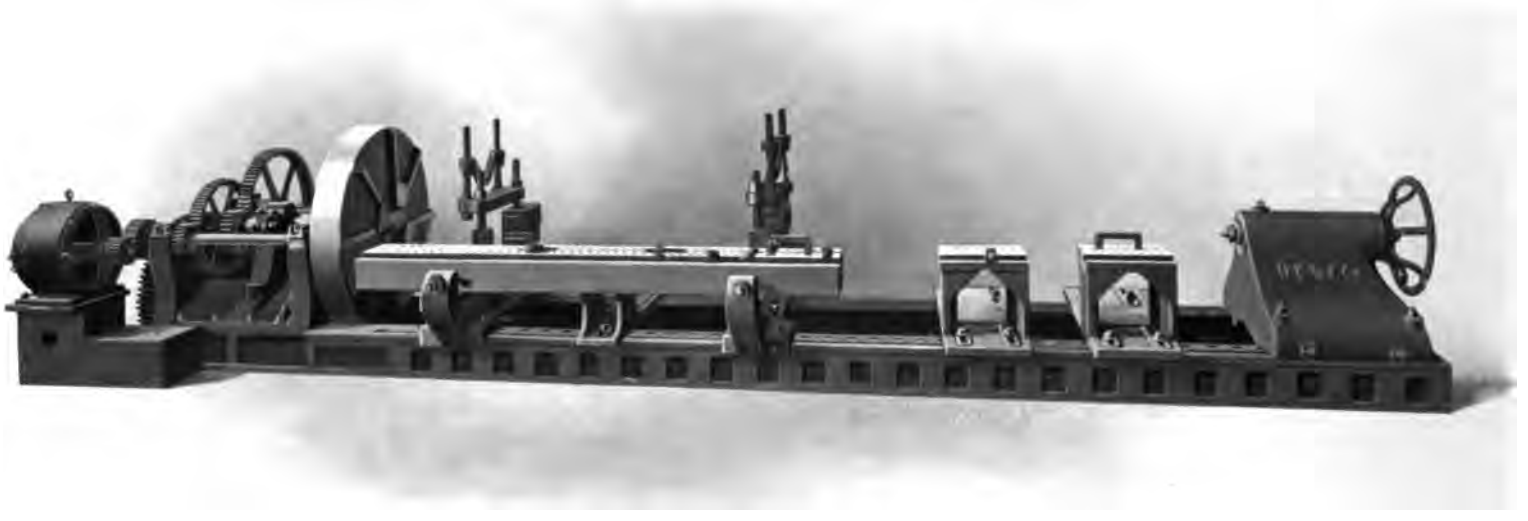


ILLUSTRATION NO. 826

50-INCH ROLL TURNING LATHE

Driven by variable-speed motor

This lathe is suitable for large plate, beam or blooming mill rolls for 48-inch trains and under.
Face plate runs .4 to 1.6 revolutions per minute.
Size of electric motor, 20 horse-power.
Usual length of bed, 24 feet.
Floor space, 8 feet 6 inches x 28 feet 6 inches.
Weight, complete, 72,000 pounds.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

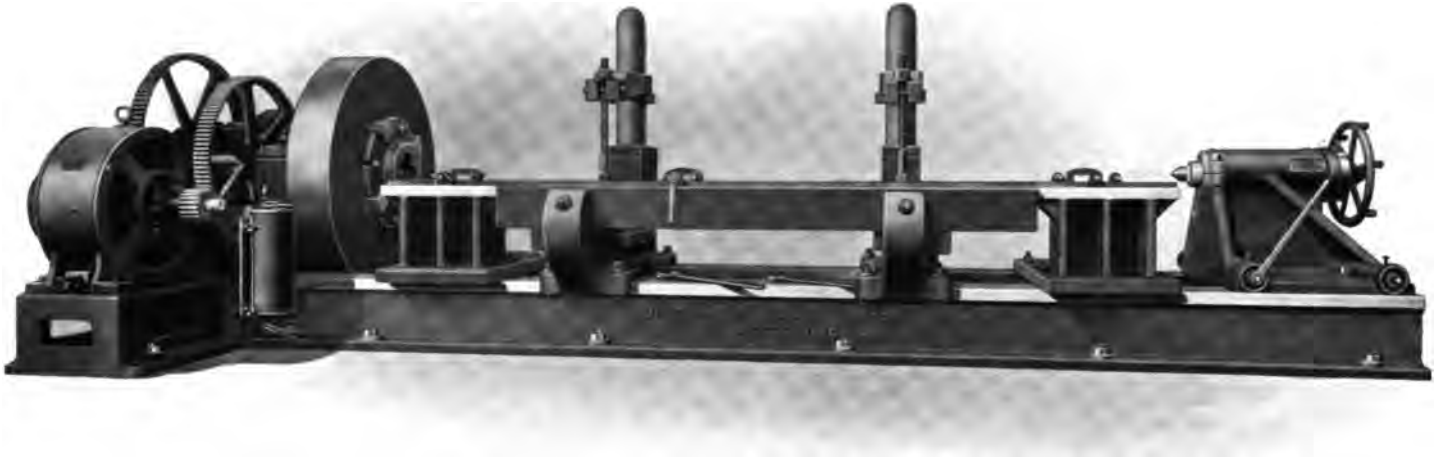


ILLUSTRATION No. 490

60-INCH ROLL TURNING LATHE

Driven by variable-speed motor

This lathe is suitable for large plate, beam, armor or blooming mill rolls for 48-inch trains and under.
Face plate runs ½ to 2 revolutions per minute.
Size of electric motor, 20 horse-power.
Usual length of bed, 30 feet.
Floor space, 11 feet 3 inches x 31 feet.
Weight, complete, 95,000 pounds.

ROLL TURNING LATHE

WITH CHANGE SPEED GEARING

THIS lathe is driven by direct-connected motor, running at one speed; or can be driven by belt, the necessary changes of speed being covered in the change speed gearing carried directly on the headstock of the lathe. There are five intermediate changes of speed, with a total ratio of 5 to 1.

The operation of these change gears is controlled by two hand levers which are counterbalanced and conveniently located, so that the speed can be changed very easily. This fact so simplifies the gear arrangement that two sets cannot be thrown into mesh at the same time. This arrangement eliminates all danger of stripping or locking gears. All gears are cast steel, with cut teeth, insuring ample strength and smoothness of operation, which is an important feature. The locking casting for holding the idler gear also acts as a guard in front of the gears and prevents accidents. This arrangement of change gears does away with friction clutches, which are unsatisfactory and wear quickly, and also eliminates the necessity of removing gears entirely, as is done in some cases where a change of speed is required.

Any type of motor can be used and easily connected to the driving arrangement.

These lathes are built in all of our standard sizes.

ILLUSTRATION No. 427

44-INCH DOUBLE ROLL TURNING LATHE

Motor driven

Equipped with change speed gears

ILLUSTRATION No. 421

HEADSTOCK FOR 44-INCH ROLL TURNING LATHE

Motor driven

Equipped with variable-speed change gears

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

Illustration No. 420

ROLL TURNING ATTACHMENT FOR PLATE MILL

ROLLER STRAIGHTENING MACHINES

THESE machines are built for straightening practically all rolled sections, including angles, beams, channels, T-bars, rails, tie plates, U-bars and plates of any thickness or width. They are all equipped with seven or eight rolls, except the plate straightening machines, which may have from nine up to nineteen rolls, depending on the thickness of the plates. The machines for straightening shapes are built with either inside or overhung rolls. These rolls are usually made of cast-iron with a chilled surface, although in some cases we furnish cast steel rolls or forgings and in the case of plate straightening machines, the rolls are always forged steel.

The bottom rolls are driven, while the top rolls run by friction and are adjusted vertically by means of hand wheels and gearing, in some cases each roll having independent adjustment and in others the entire set of top rolls is adjusted by one hand wheel, while the last roll on the delivery side has, in addition to this, an independent adjustment.

The housings and bed plates are of heavy construction, insuring ample strength and rigidity and are usually made of air furnace iron castings unless otherwise specified.

The gearing is cast steel with large shafts and bearings. The roll bearings are usually cast steel with bronze bushings. All parts are of easy access and in most cases the housings are split horizontally to facilitate the changing of rolls, and in the large machines the top rolls are counterbalanced by cast-iron counterweights hung below the bed plate.

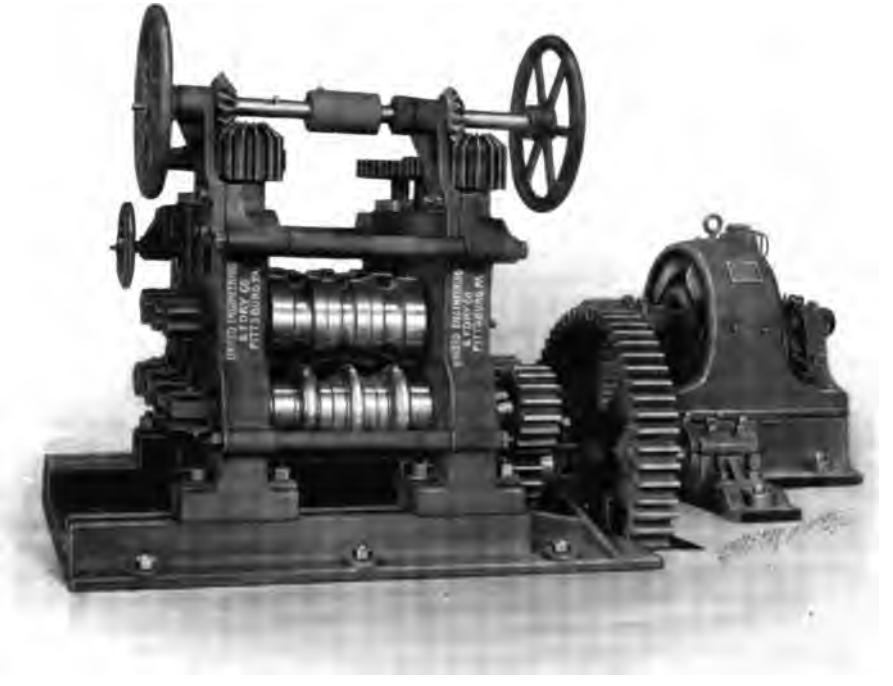


ILLUSTRATION No. 255

No. 2 ROLLER STRAIGHTENING MACHINE

Motor driven

Capacity up to 2½ x 2½-inch angles

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

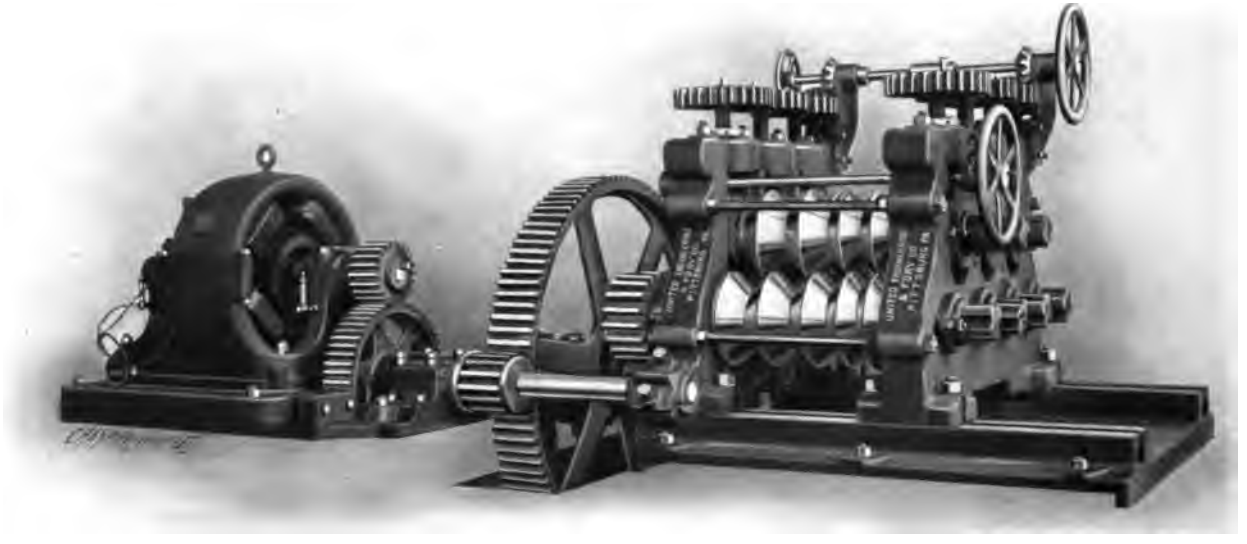


ILLUSTRATION No. 253

No. 1 ROLLER STRAIGHTENING MACHINE

Motor driven

With 7 rolls. Capacity up to 4 x 4 x 5/8-inch angles

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

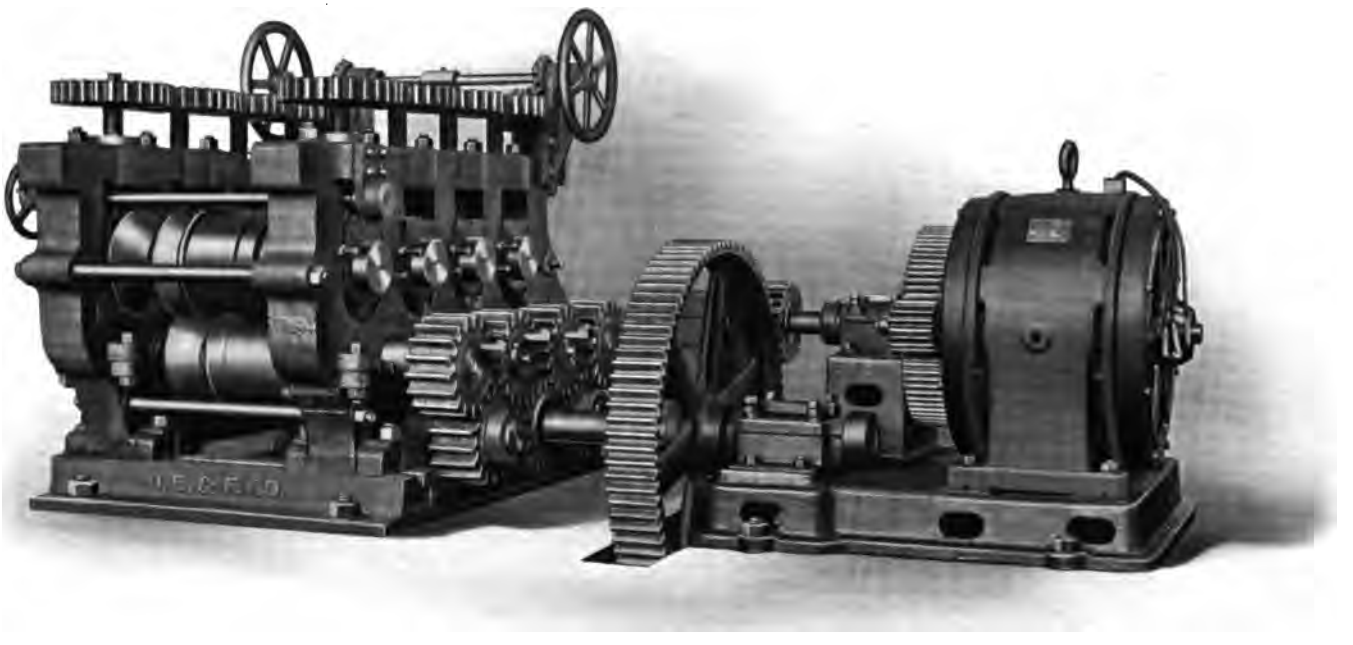


ILLUSTRATION No. 486

No. 1 ROLLER STRAIGHTENING MACHINE

Motor driven

With 8 rolls. Capacity up to 4 x 4 x 5/8-inch angles

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

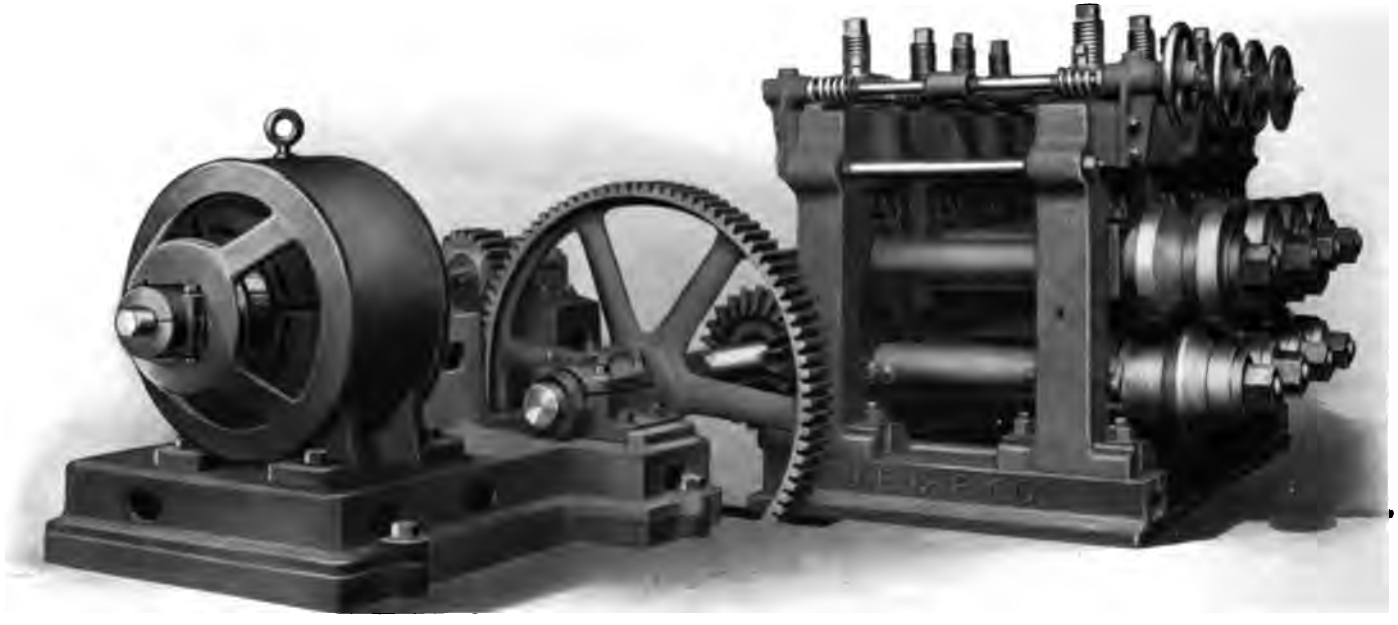


ILLUSTRATION No. 675

No. 1 ROLLER STRAIGHTENING MACHINE

Motor driven

With overhung rolls. Capacity up to 4 x 4 x ⅝-inch angles

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

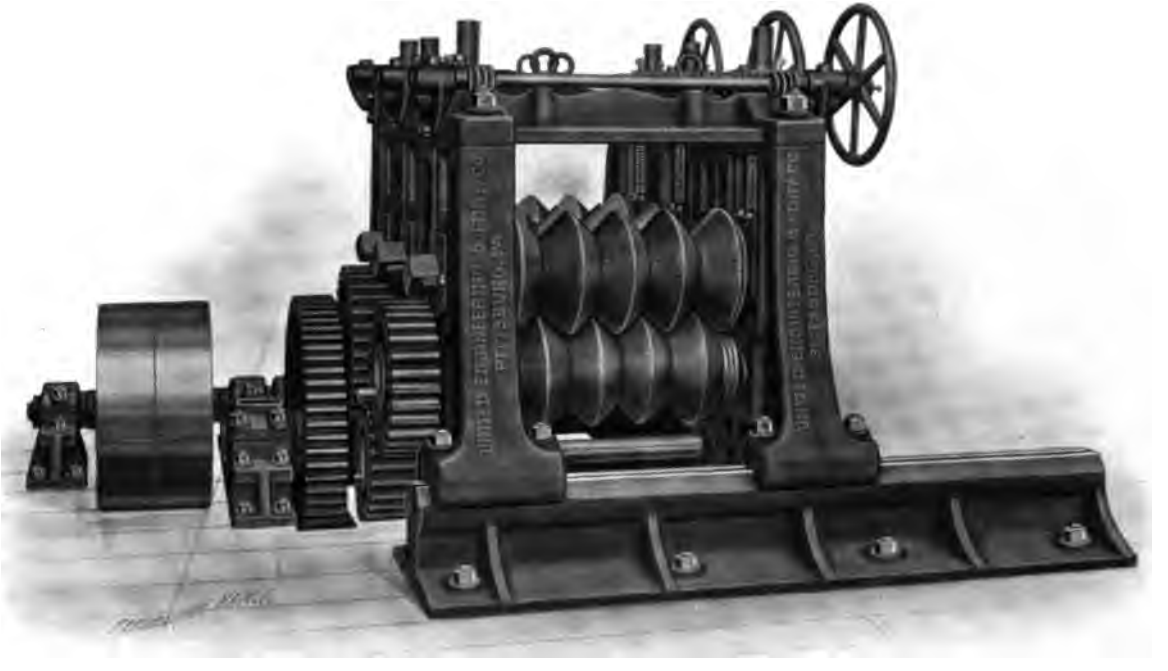


ILLUSTRATION No. 98

No. 0 ROLLER STRAIGHTENING MACHINE

Belt driven

Capacity up to 8 x 8 x ¾-inch angles

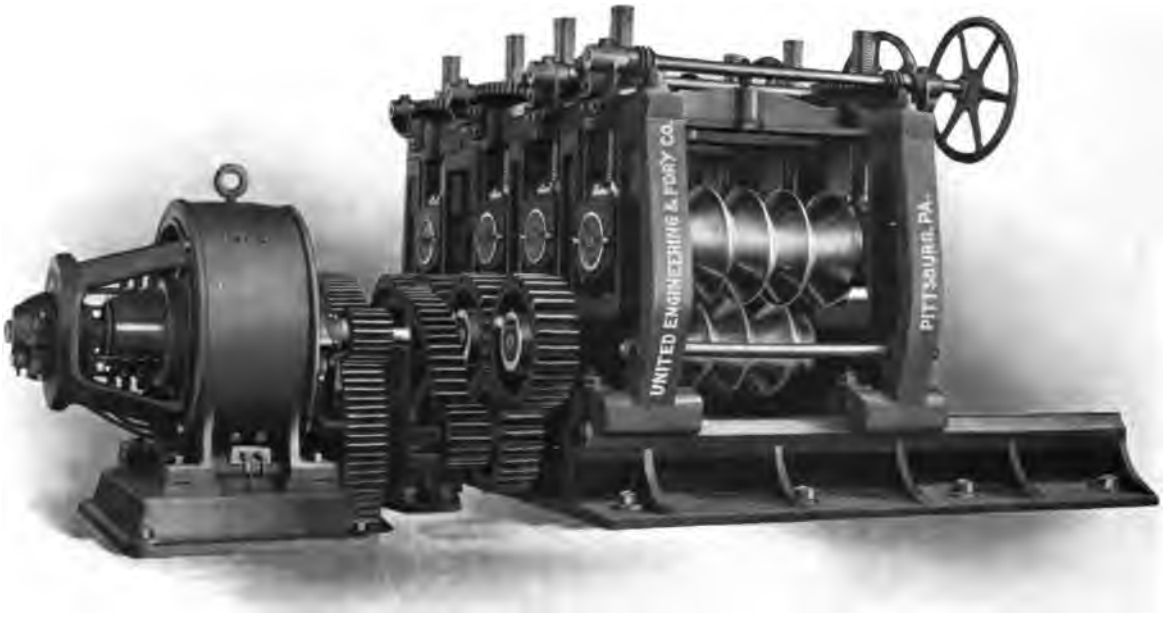


ILLUSTRATION NO. 459

NO. 0 ROLLER STRAIGHTENING MACHINE

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

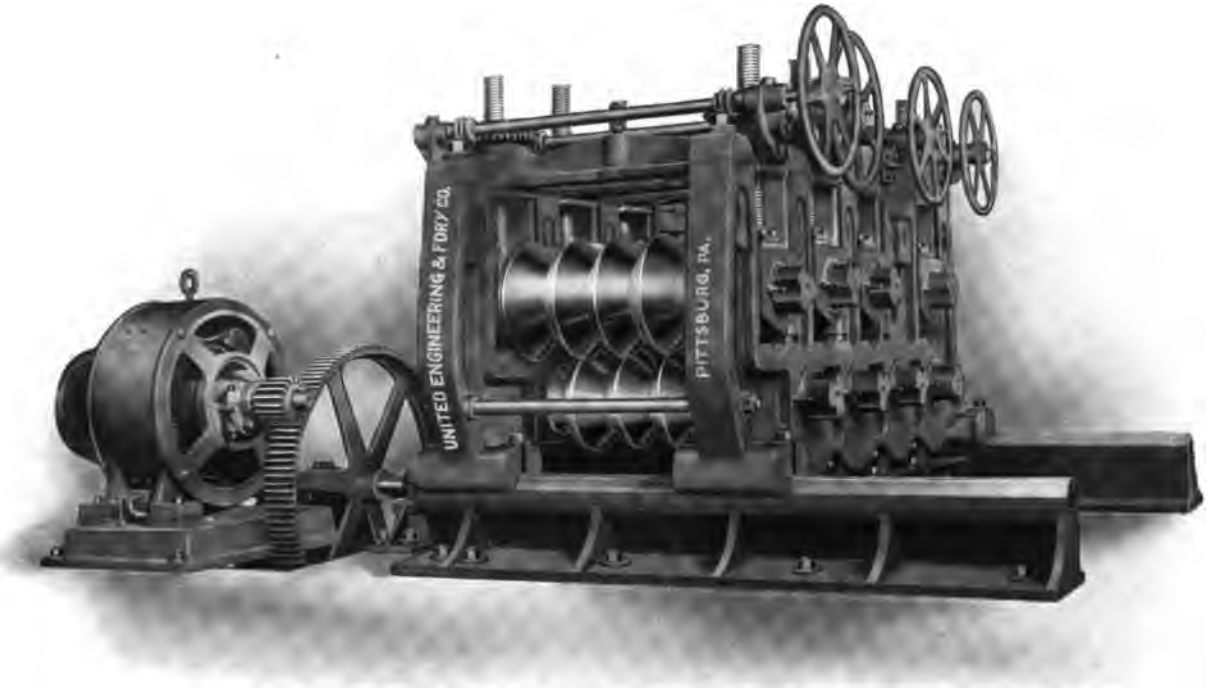


ILLUSTRATION No. 460

No. 0 ROLLER STRAIGHTENING MACHINE

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

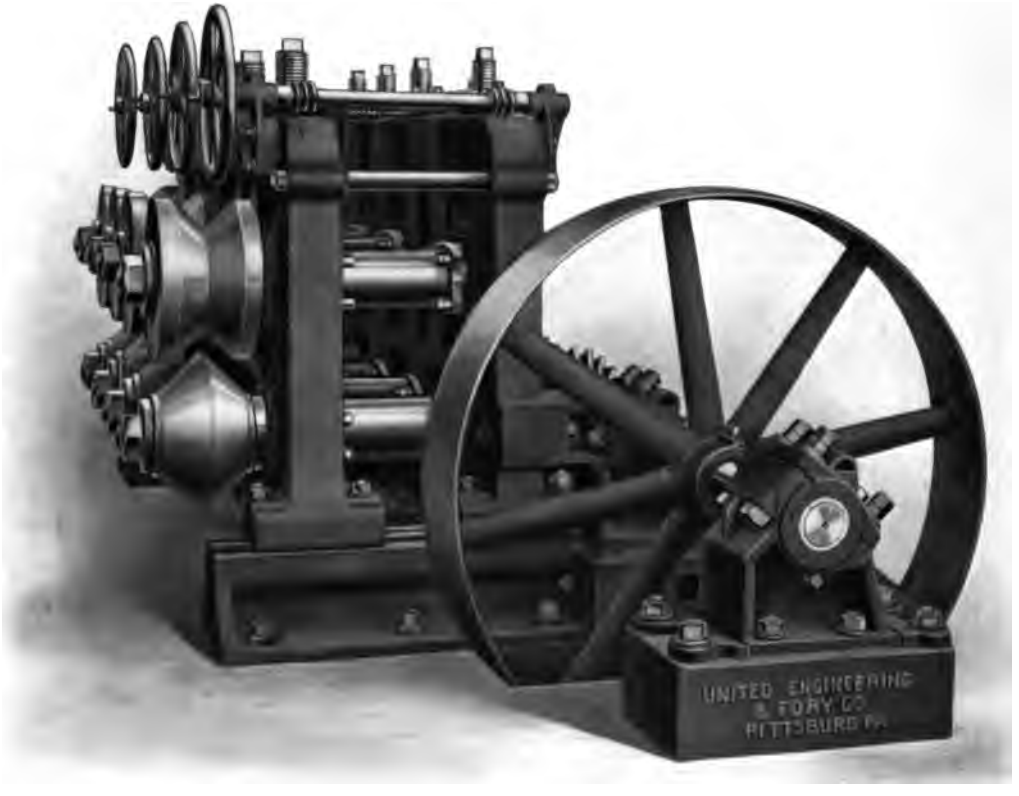


ILLUSTRATION No. 270

No. 00 ROLLER STRAIGHTENING MACHINE

Belt driven

Capacity up to 8 x 8 x 1-inch angles

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

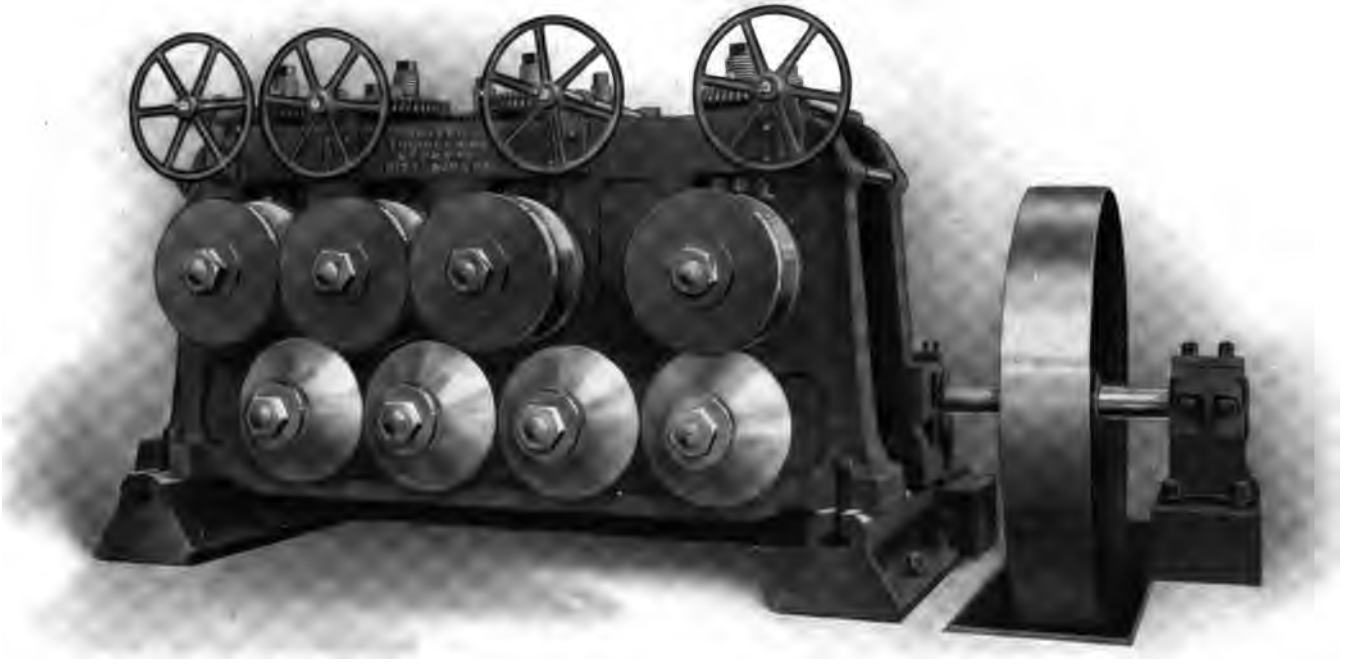


ILLUSTRATION No. 271

No. 00 ROLLER STRAIGHTENING MACHINE

Another view of Illustration No. 270

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

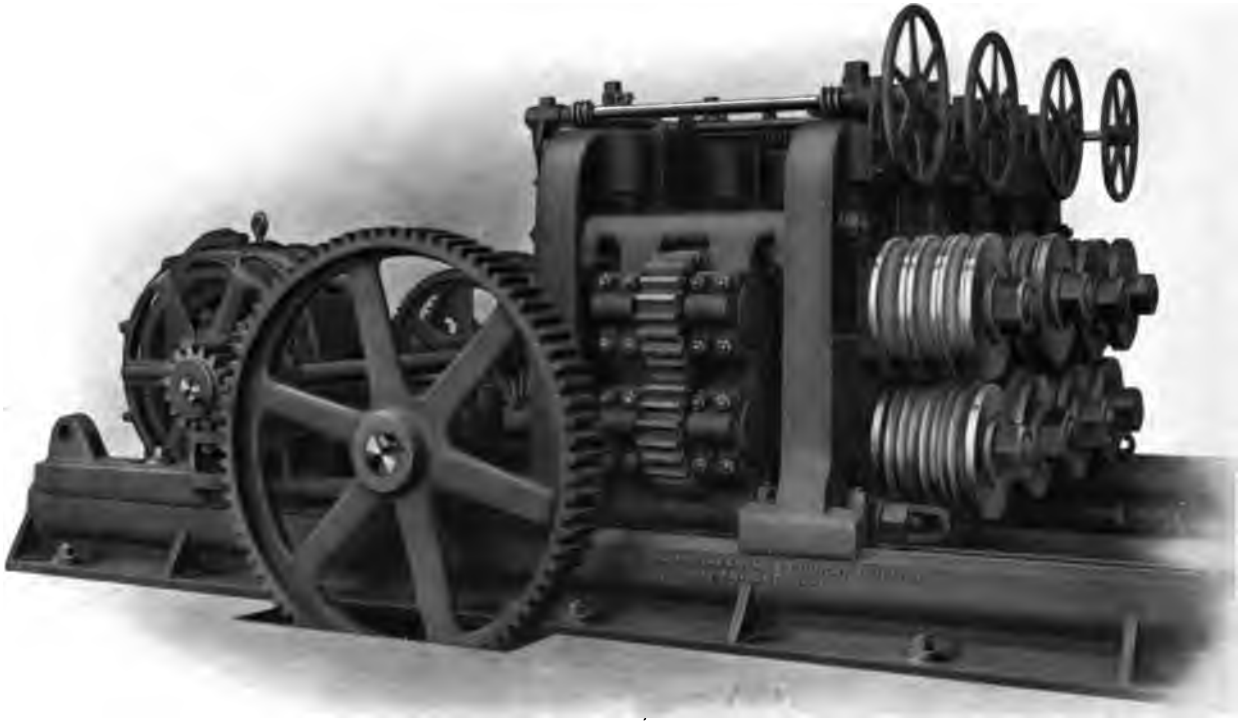


ILLUSTRATION No. 501

No. 00 ROLLER STRAIGHTENING MACHINE

Motor driven

Overhung rollers arranged for straightening light rails

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

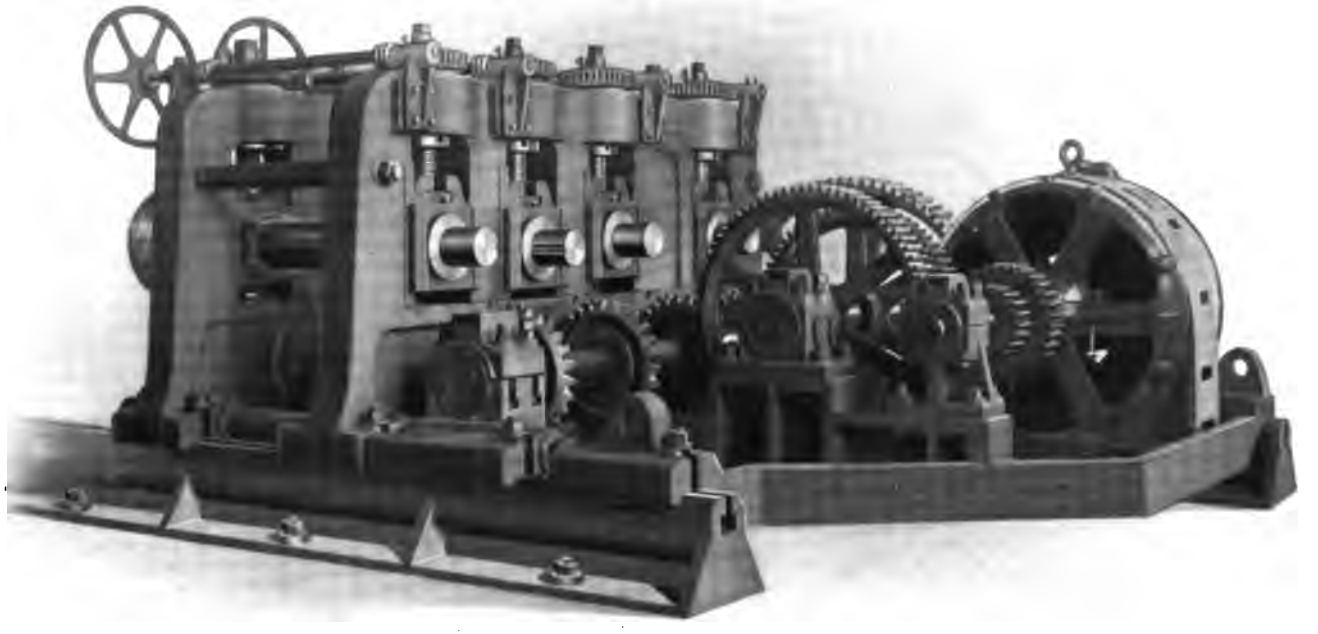


ILLUSTRATION No. 502

No. 00 ROLLER STRAIGHTENING MACHINE

Motor driven

Overhung rollers arranged for straightening light rails

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

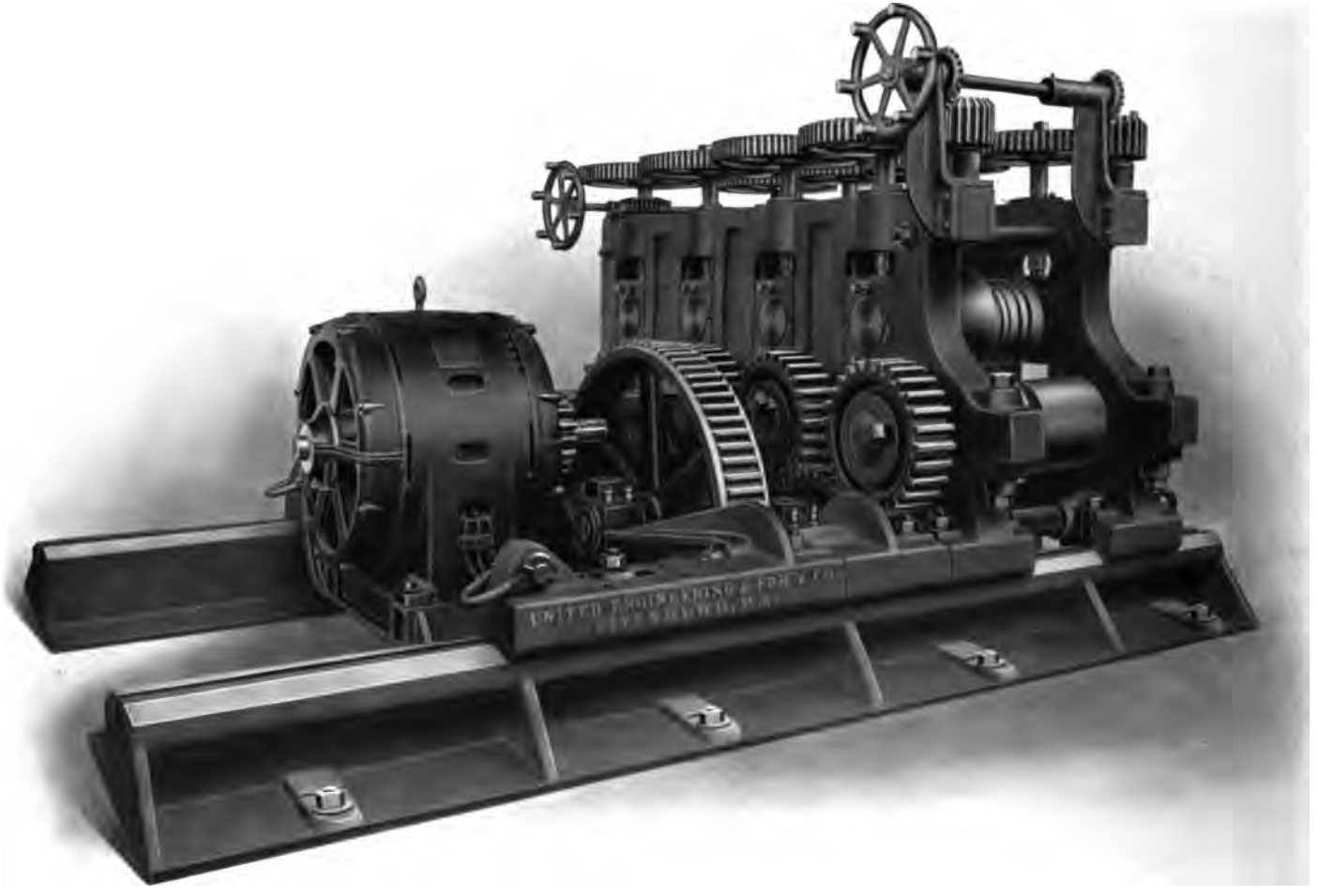


ILLUSTRATION No. 495

8 x 8-INCH ROLLER STRAIGHTENING MACHINE

Motor driven

Arranged to be moved sidewise

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

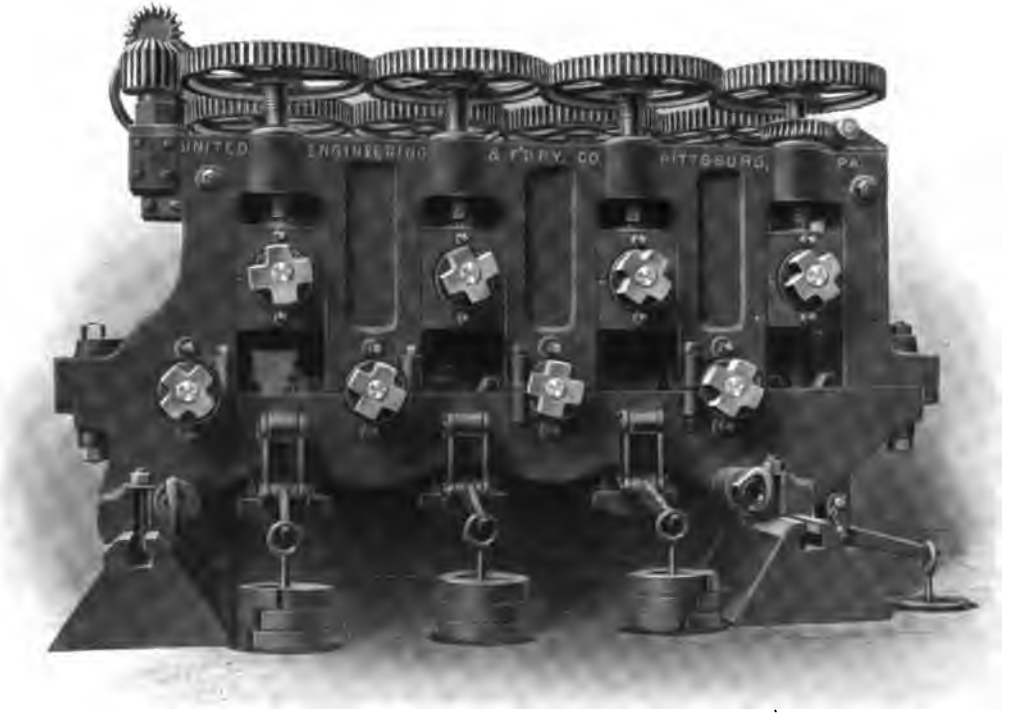


ILLUSTRATION NO. 496

8 x 8–INCH ROLLER STRAIGHTENING MACHINE

Motor driven

Side view of Illustration No. 495

UNITED ENGINEERING & FDRY. CO. PITTSBURG, PA.

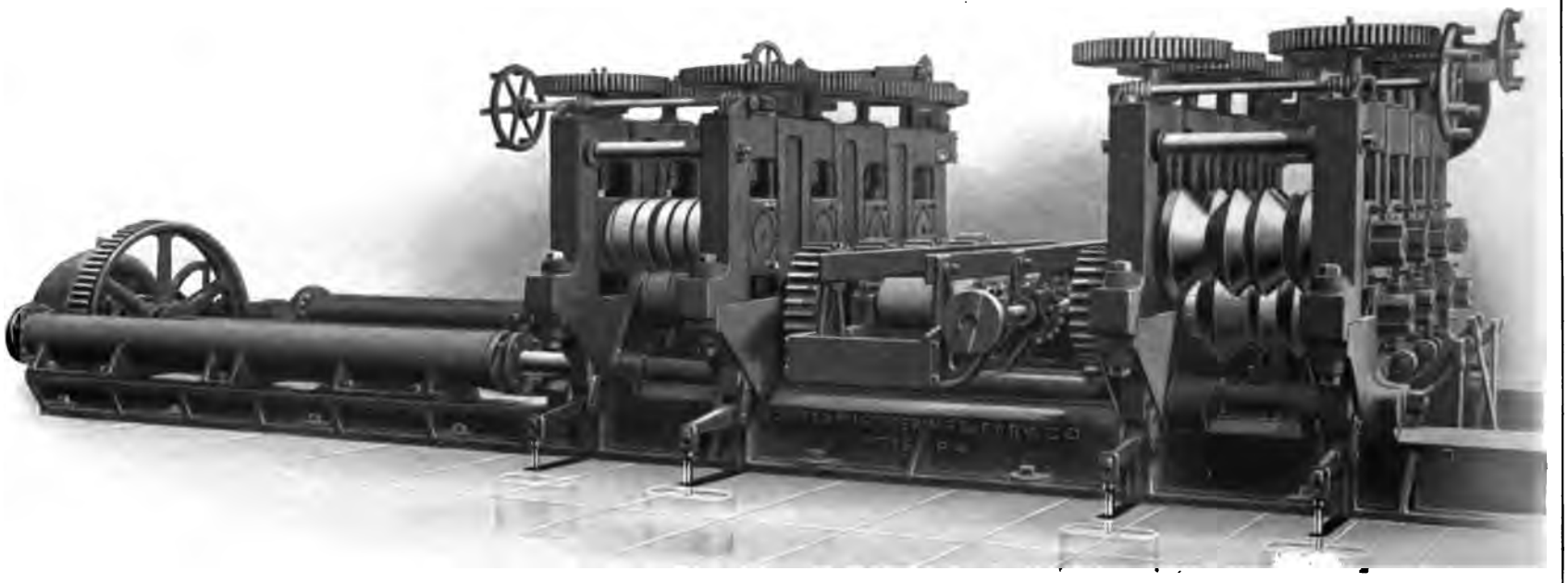


ILLUSTRATION NO. 624

8 x 8-INCH ROLLER STRAIGHTENING MACHINE

Motor driven

Equipped with two sets of rolls and roller table arranged to be moved sidewise so that either set of rolls or roller table can be placed in line with mill tables. One set of rolls is arranged for straightening beams and channels, while the other set is for angles

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

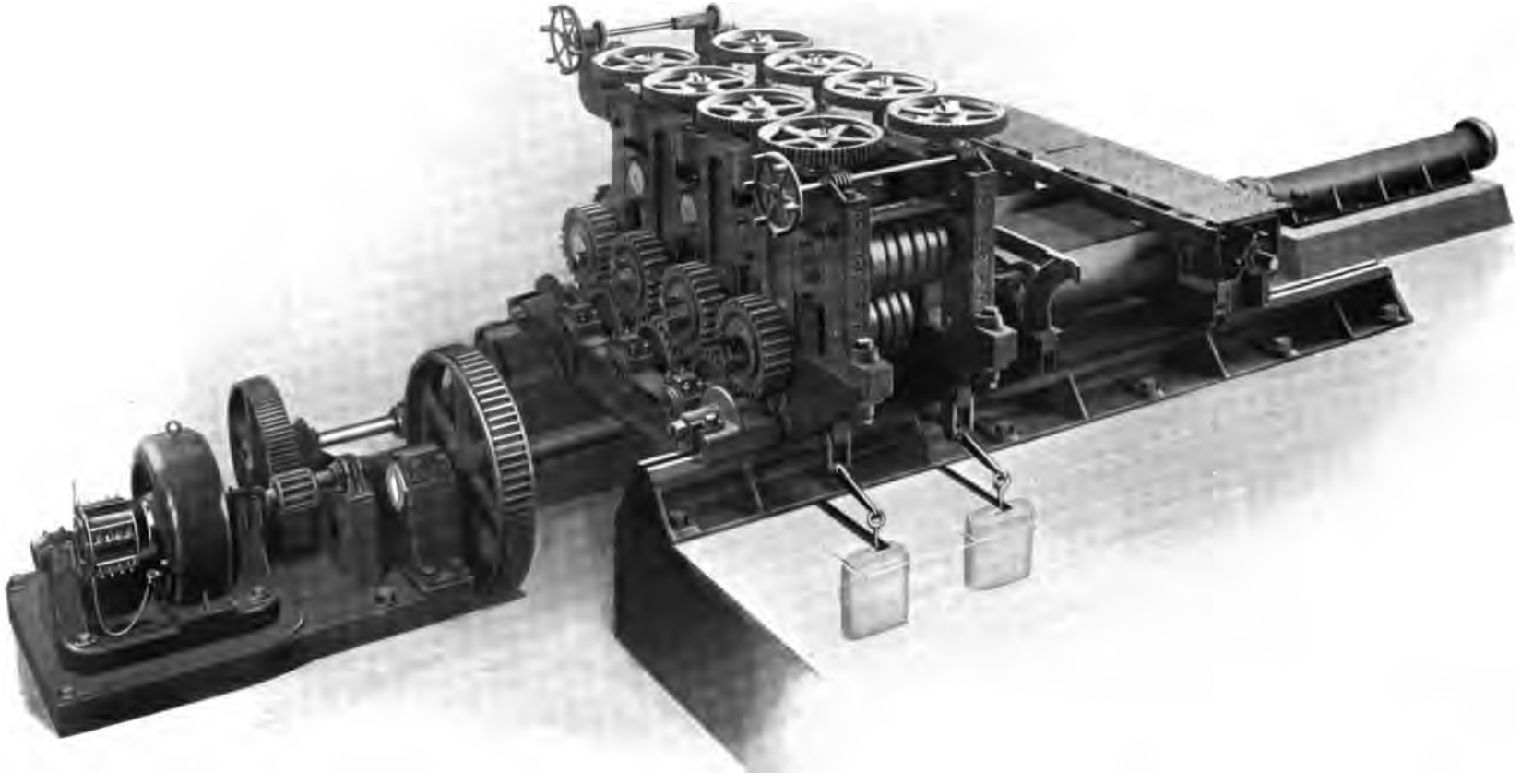


ILLUSTRATION No. 620

8 x 8–INCH ROLLER STRAIGHTENING MACHINE

Motor driven

Arranged to be moved sidewise so that either the straightening rolls or section of roller table can be placed in line with the mill tables

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

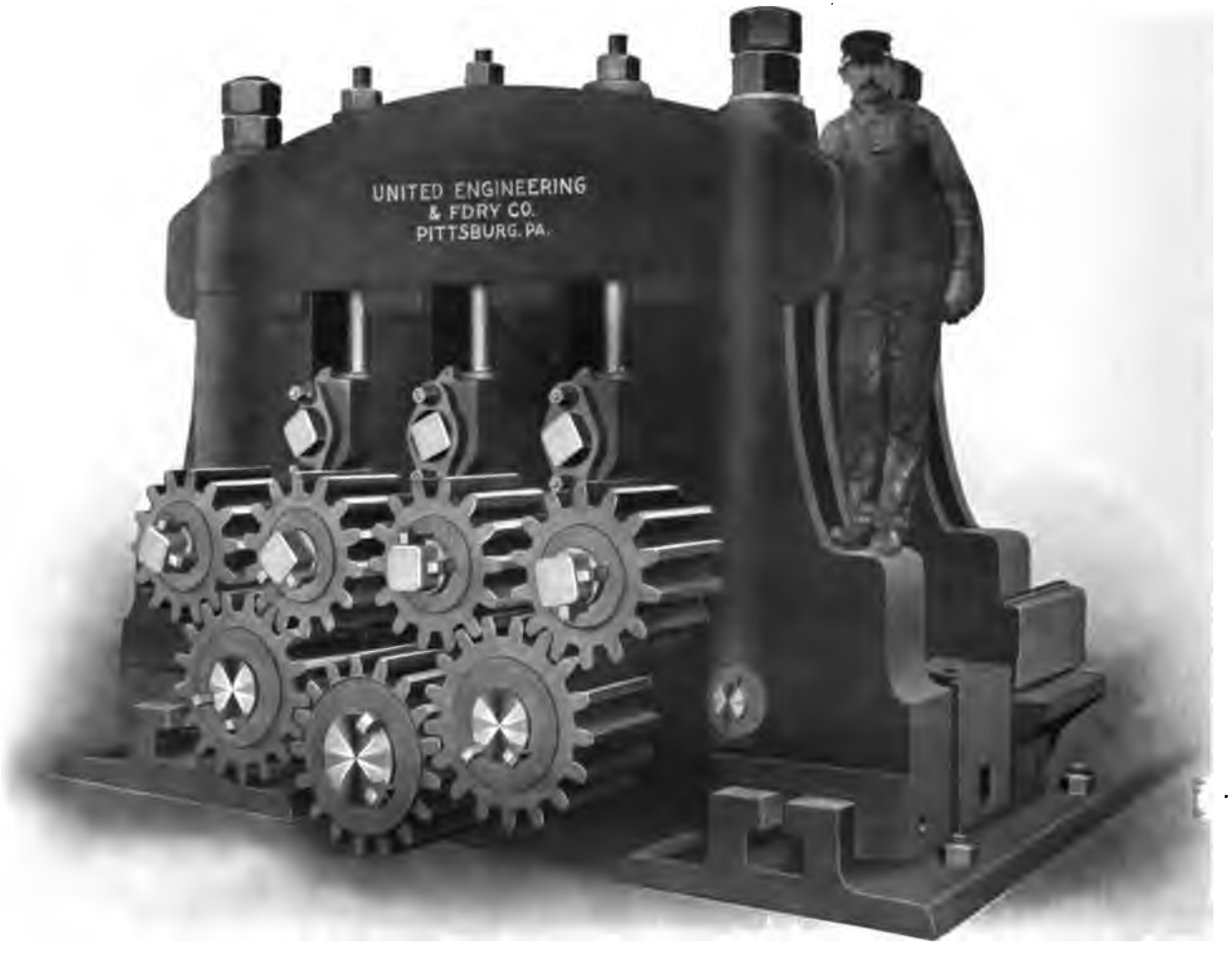


ILLUSTRATION NO. 461

SPECIAL ANGLE AND BEAM STRAIGHTENING MACHINE

Designed and built for Jones & Laughlin Steel Company, Pittsburg, Pa.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 462

SPECIAL ANGLE AND BEAM STRAIGHTENING MACHINE

Designed and built for Jones & Laughlin Steel Company, Pittsburg, Pa.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

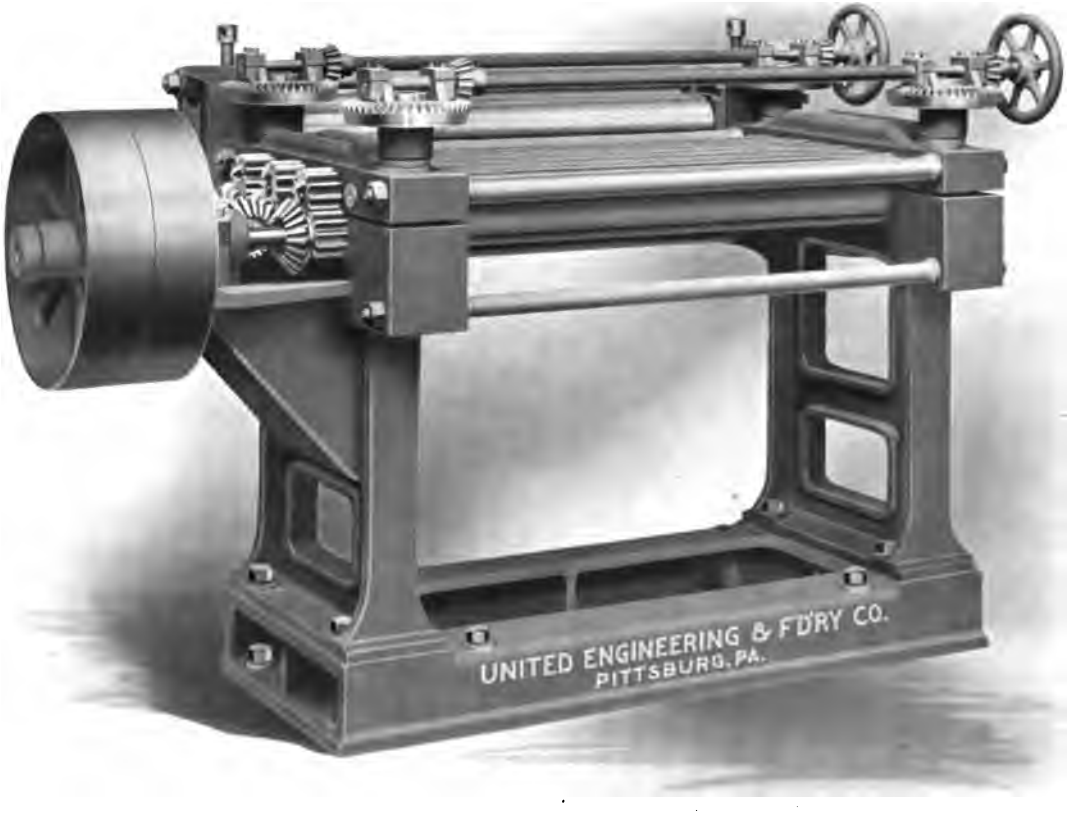


ILLUSTRATION NO. 485

PLATE LEVELING MACHINE

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 484

PLATE LEVELING MACHINE

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

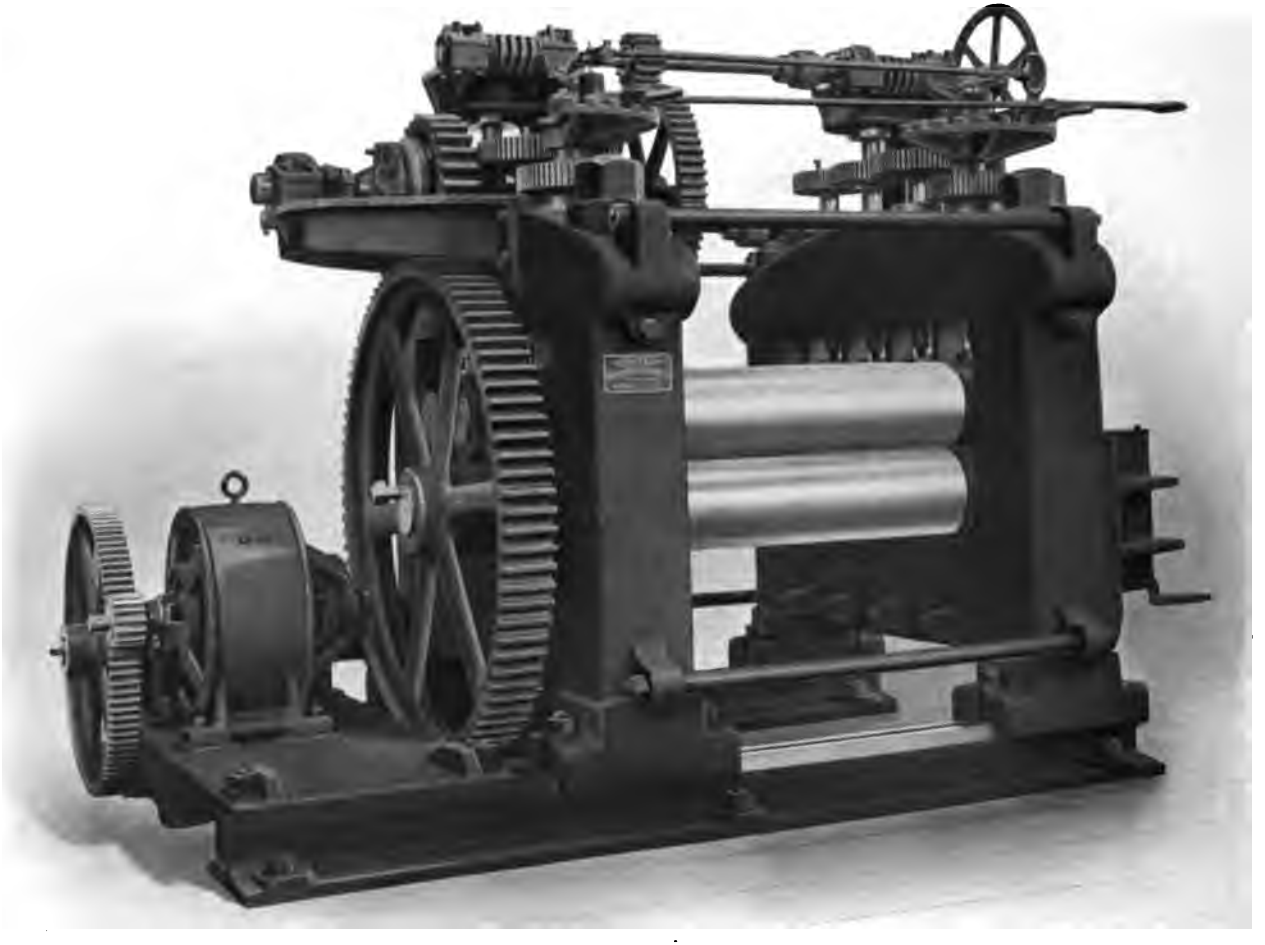


ILLUSTRATION NO. 439

PLATE STRAIGHTENING MACHINE

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

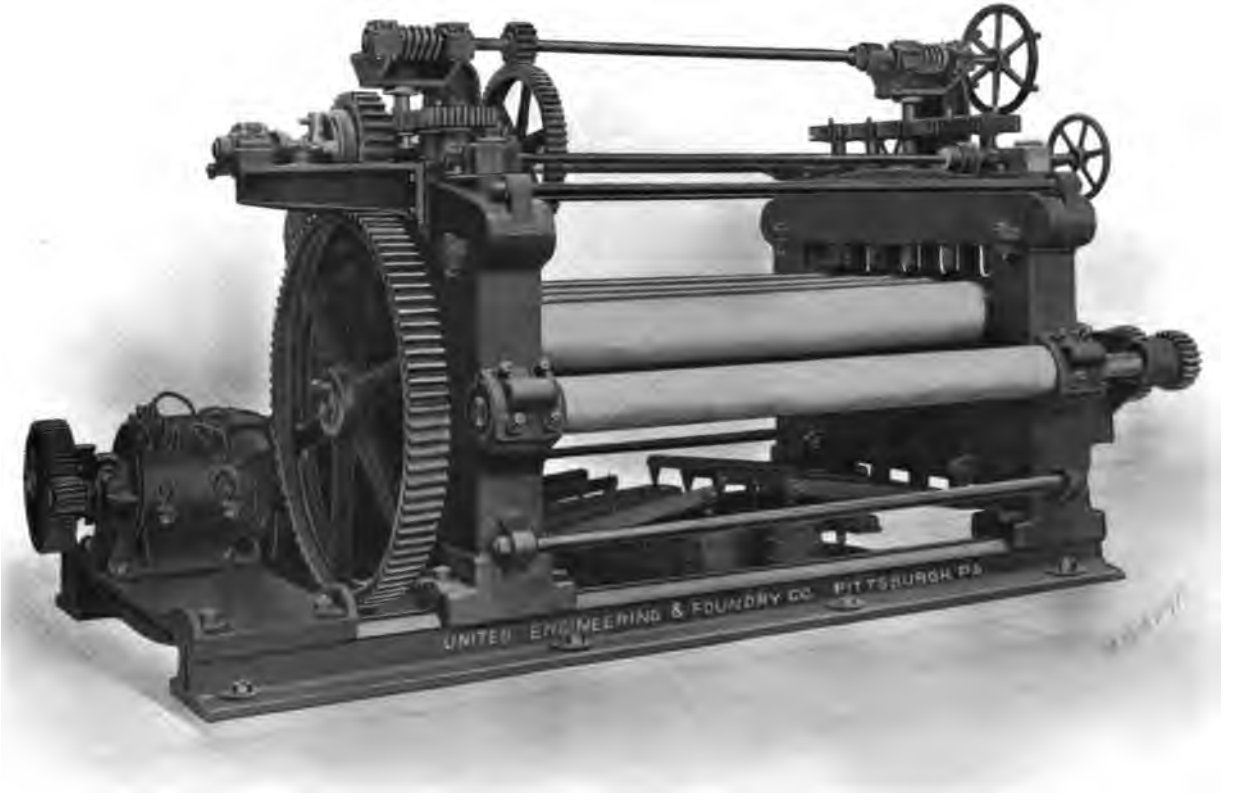


ILLUSTRATION No. 419 B

PLATE STRAIGHTENING MACHINE

Motor driven

Built in all sizes

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

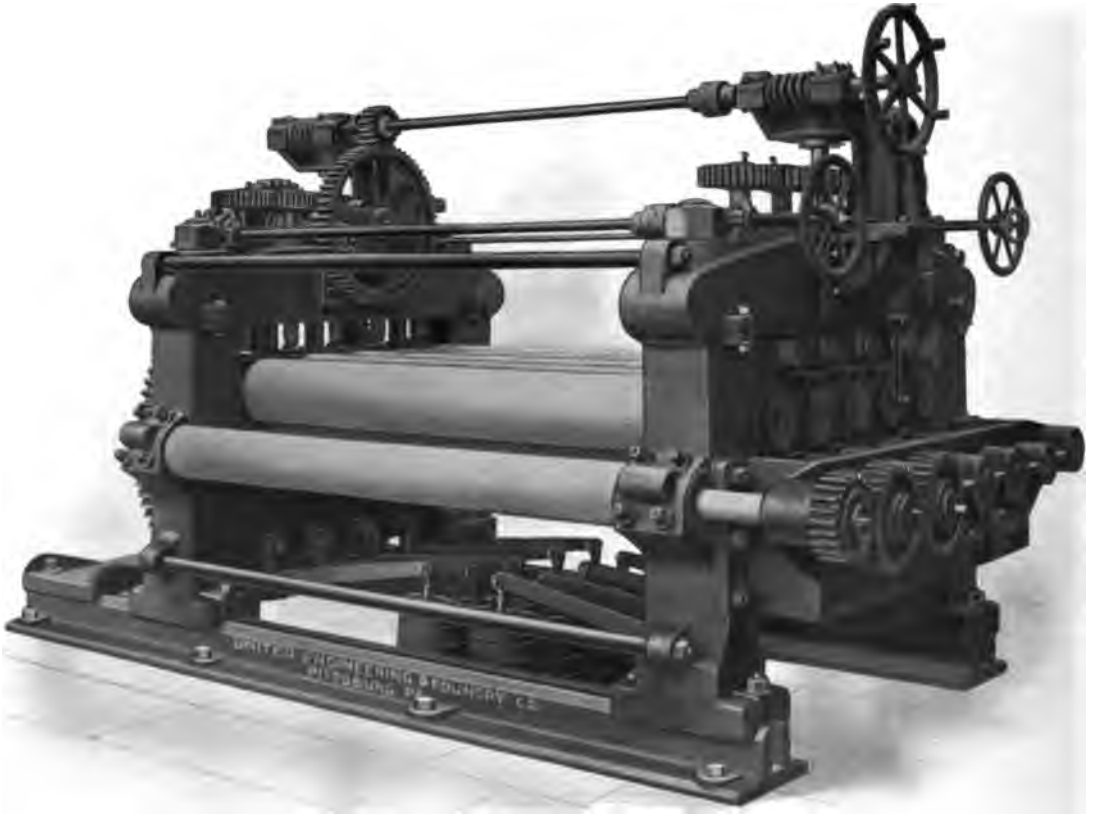


ILLUSTRATION NO. 419 A

PLATE STRAIGHTENING MACHINE

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 528

100-INCH PLATE STRAIGHTENING MACHINE AND TABLES

La Belle Iron Works, Steubenville, Ohio

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

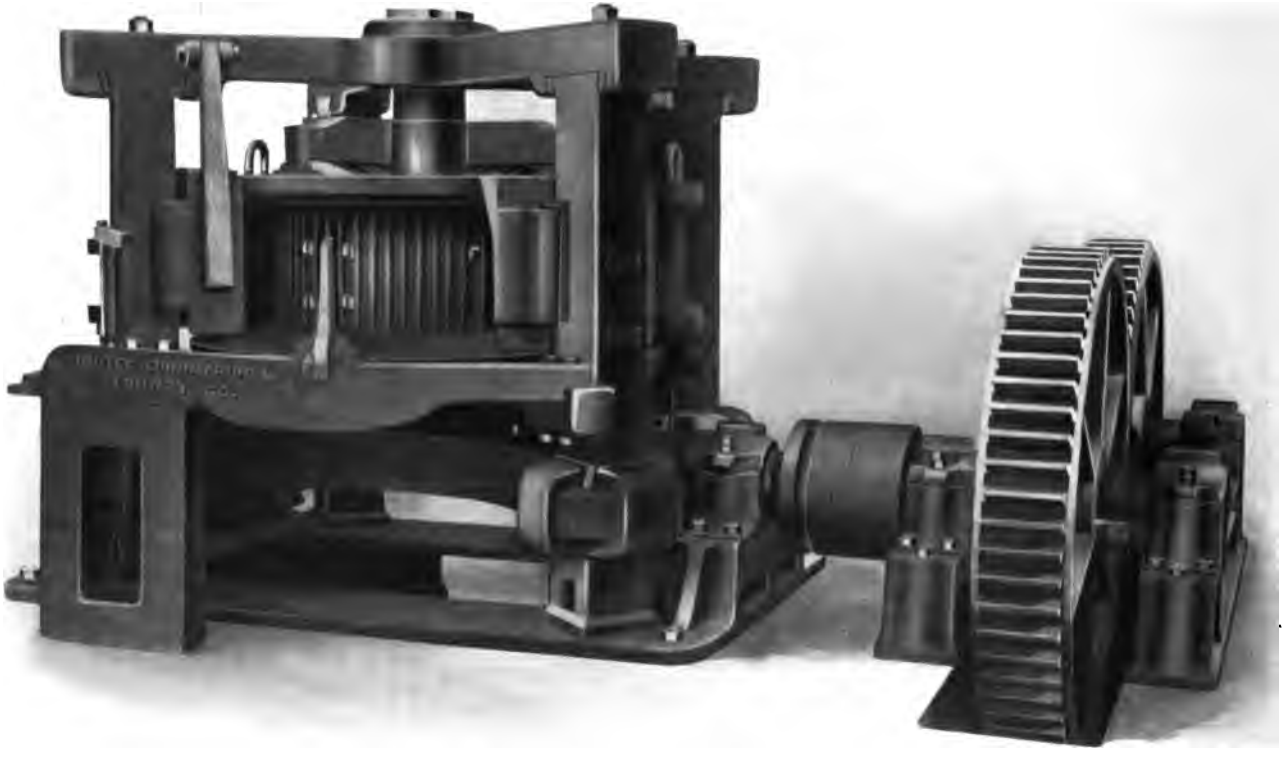


ILLUSTRATION No. 497

B 1 SQUEEZER AND GEARING

For 250-pound bloom

These machines are built in four sizes, with drums 50 inches in diameter x 19 inches high; 50 inches diameter x 24 inches high; 60 inches diameter x 26½ inches high; and 62 inches diameter x 26 inches high, respectively.

The small size squeezers deliver a 7-inch and 8-inch bloom from a 200- and 300-pound ball, while the large size squeezers deliver an 8-inch bloom from a 400-pound ball.

The weight varies from 48,000 pounds for the small machine to 94,000 pounds for the largest.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

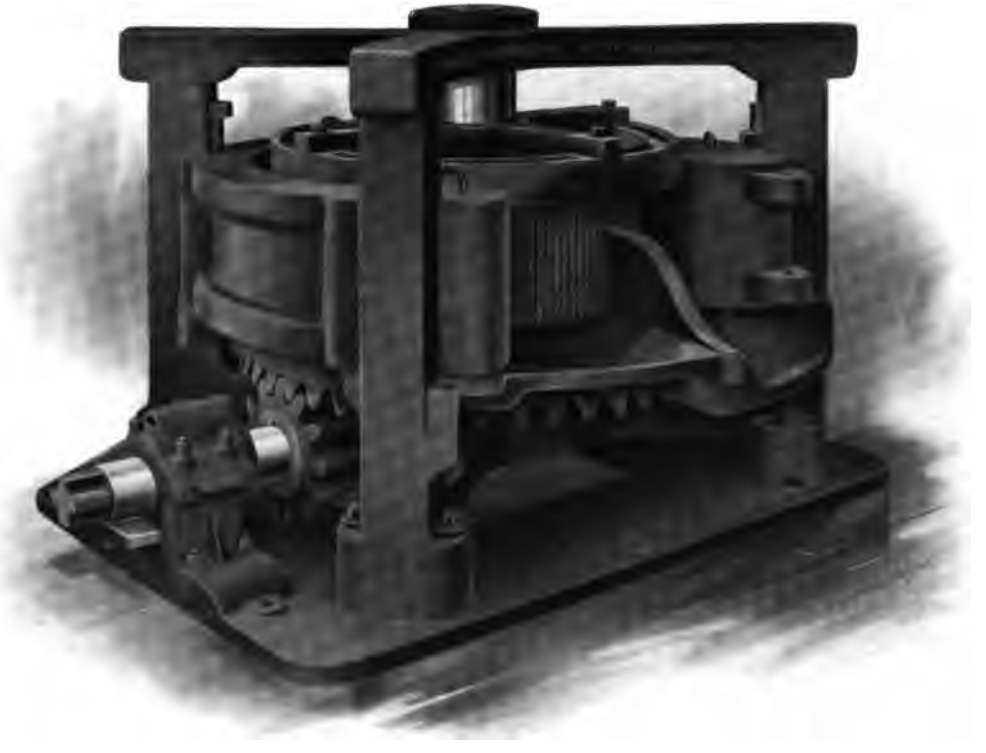


ILLUSTRATION No. 84 A

F 1 SQUEEZER FOR 400-POUND BLOOM

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 71

ACCUMULATOR — STANDARD TYPE

All pressures

We manufacture these machines in all sizes, with cylinders from 6 to 30 inches in diameter, having a stroke of 5 feet up to 12 feet, for any pressure up to 5000 pounds per square inch.

These accumulators are all made with steel tanks, which are usually filled with steel punchings to act as a counterbalance.

They are all self-contained, with working parts easy of access.

The base plates are of strong and heavy design, being amply large to give a good solid bearing on the foundation and insure stability.

The cylinders are made of cast-iron for light pressures and cast steel for heavy pressures.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 384

ACCUMULATOR — INVERTED TYPE

All pressures

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

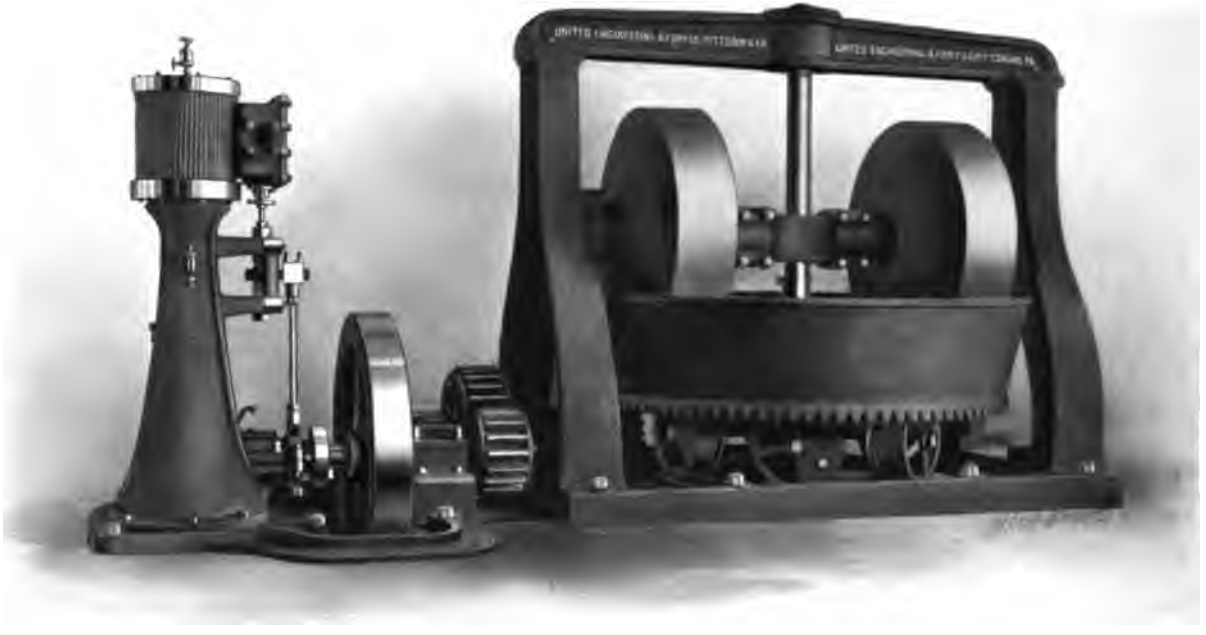


ILLUSTRATION No. 121 A

GRINDING PAN

Engine driven

These machines are built with pans ranging from 6 to 9 feet in diameter, and are furnished with tight and loose pulleys, or with direct-connected engine or electric motor. See Illustration No. 504

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

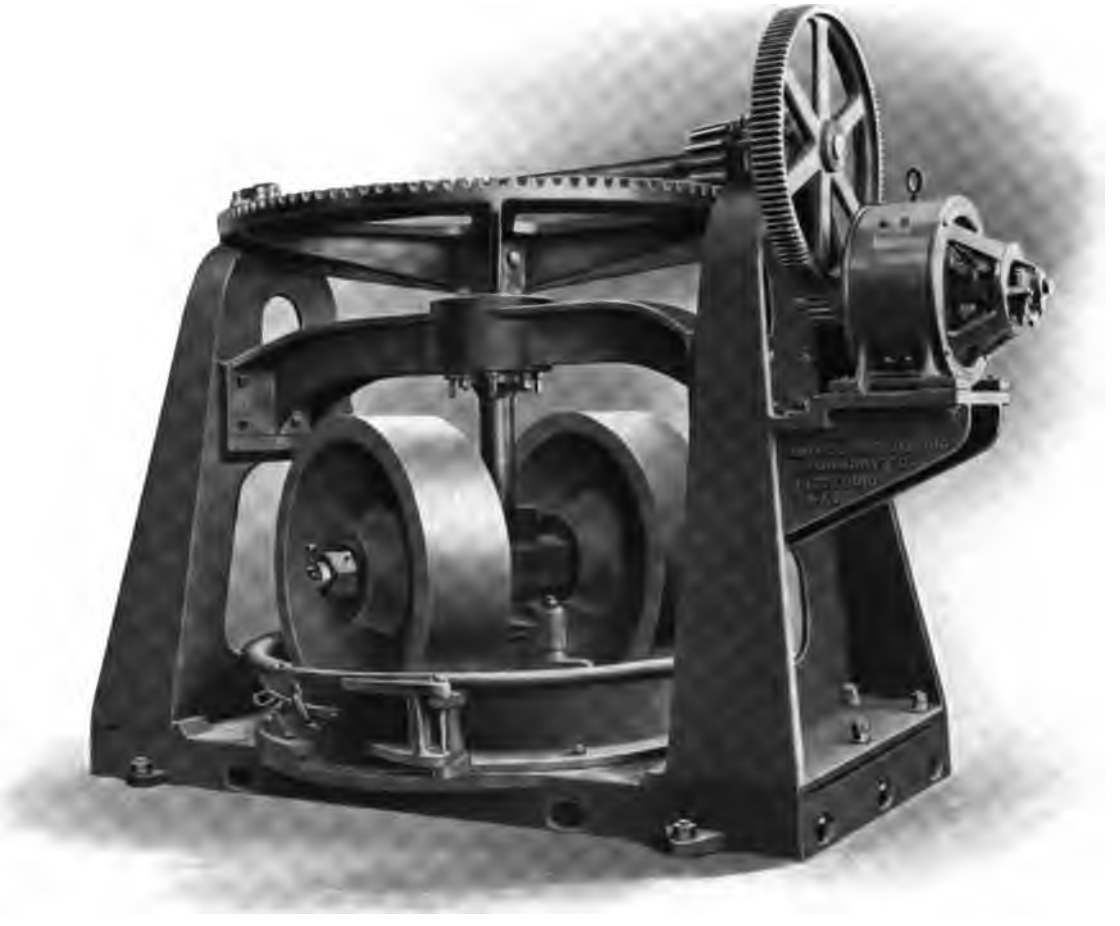


ILLUSTRATION No. 504

GRINDING PAN

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

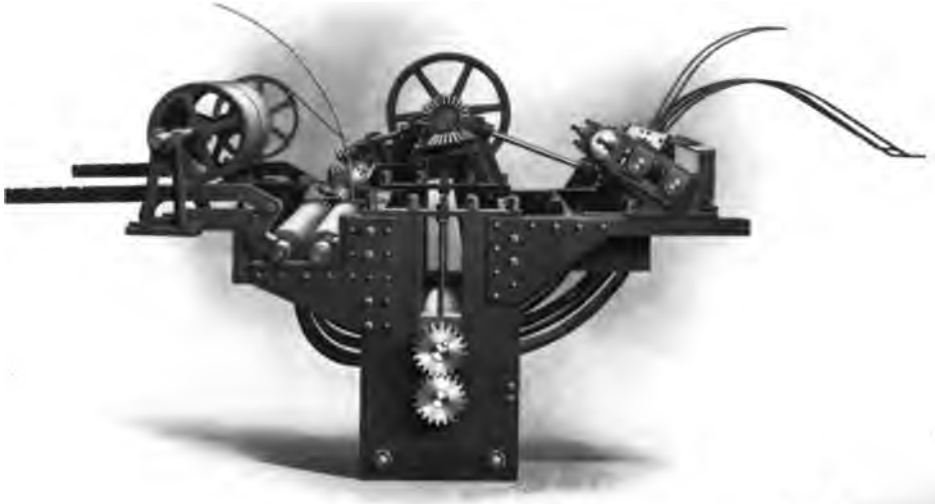


ILLUSTRATION No. 815

ILLUSTRATION No. 816

GALVANIZING MACHINE

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

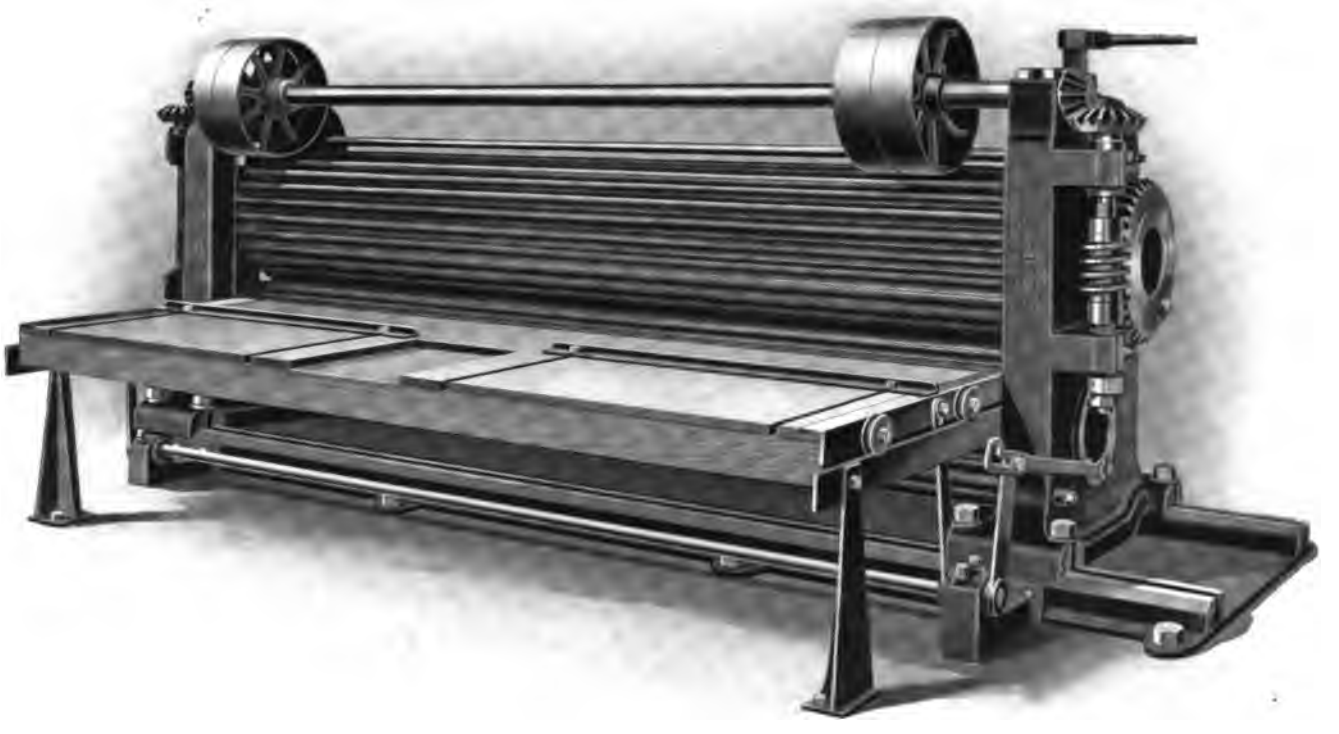


ILLUSTRATION No. 731

CORRUGATING MACHINE

Belt driven

With feed table

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 175
HYDRAULIC JIB CRANE

ILLUSTRATION No. 176
HYDRAULIC WHIP CRANE

We manufacture hydraulic cranes to suit almost any service or capacity. We have designs and patterns for ladle, ingot or billet cranes up to 20 tons capacity. The special feature of the jib crane, as shown by Illustration No. 176, is that the crane load rests entirely upon the pivot on top of the lifting ram, permitting the crane to swing with ease either when at its lowest, highest or intermediate position. The cylinder rests upon a ring packing in the base plate, which forms the water inlet, and is held from rotating, as is also the ram; the advantage of the latter is that the packing can be easily maintained. Our ladle cranes are all equipped with structural masts and beams and with heavy cast steel top and bottom pintals. The cylinders in most cases are of cast steel, with the stuffing boxes easy of access.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 467

AUTOMOBILE TIRE VULCANIZER

Special design for Republic Rubber Co.
Youngstown, Ohio

We are prepared to design and build all classes of heavy machinery for special purposes and can furnish either individual machines or complete plants.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

CARS

THE following illustrations show only a few of the various types of cars which we build. Our designs cover all classes of billet, ingot, ash, slag, cinder, mule, scrap and ladle cars. We also furnish billet cars arranged as a "merry-go-round," with car pusher, billet conveyor, crates, etc. In most cases our cars are fitted with brass or bronze bearings, while the wheels are made of cast steel or cast-iron with chilled treads. The axles are steel forgings with the wheels pressed on. The car bodies are usually made of cast-iron, well ribbed to secure great strength and rigidity.

ILLUSTRATION No. 163

CINDER CAR

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

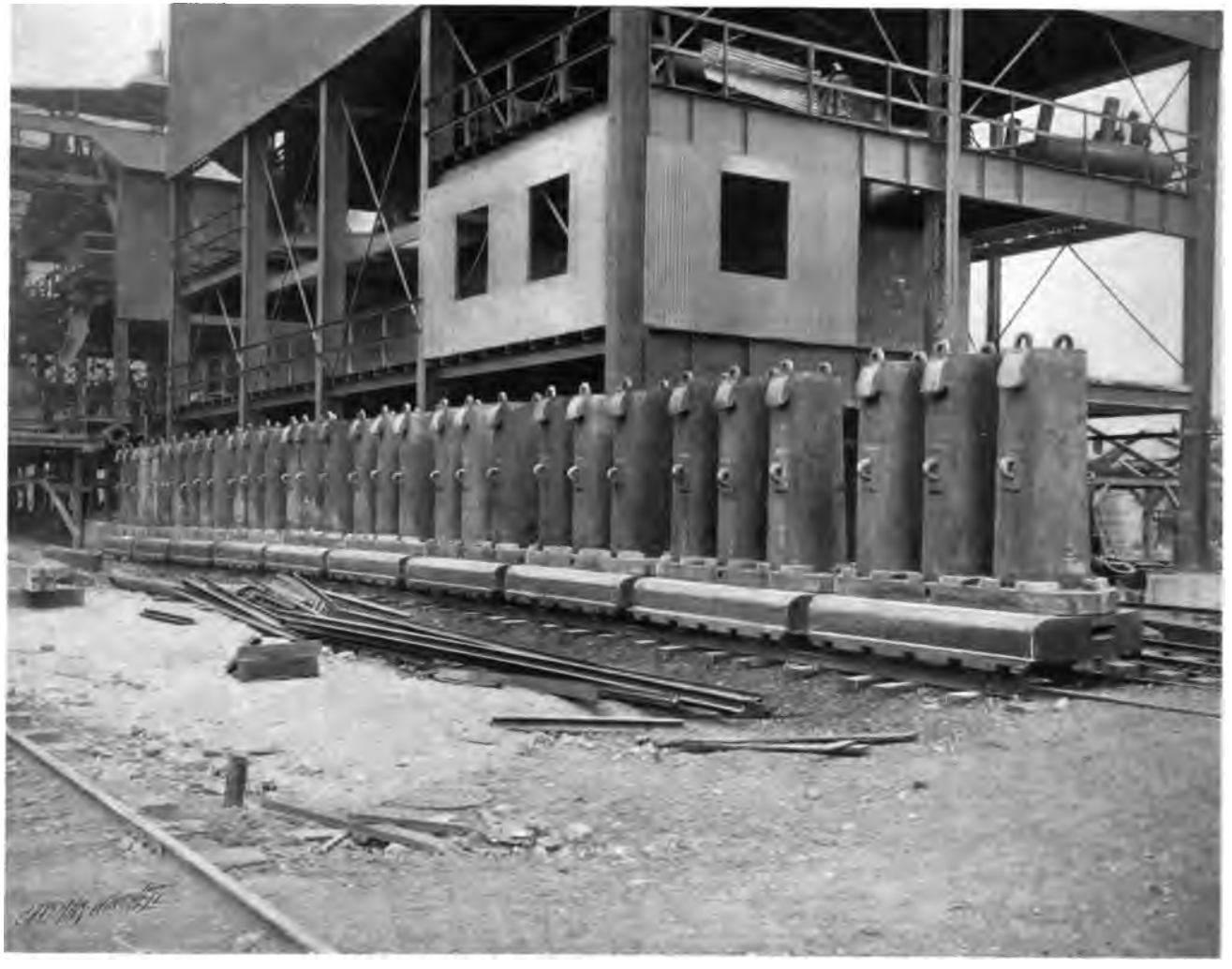


ILLUSTRATION No. 162 A

ROW OF INGOT CARS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 162

INGOT CAR

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 163 A

ROW OF ASH CARS

ILLUSTRATION No. 163 B

ASH CAR

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

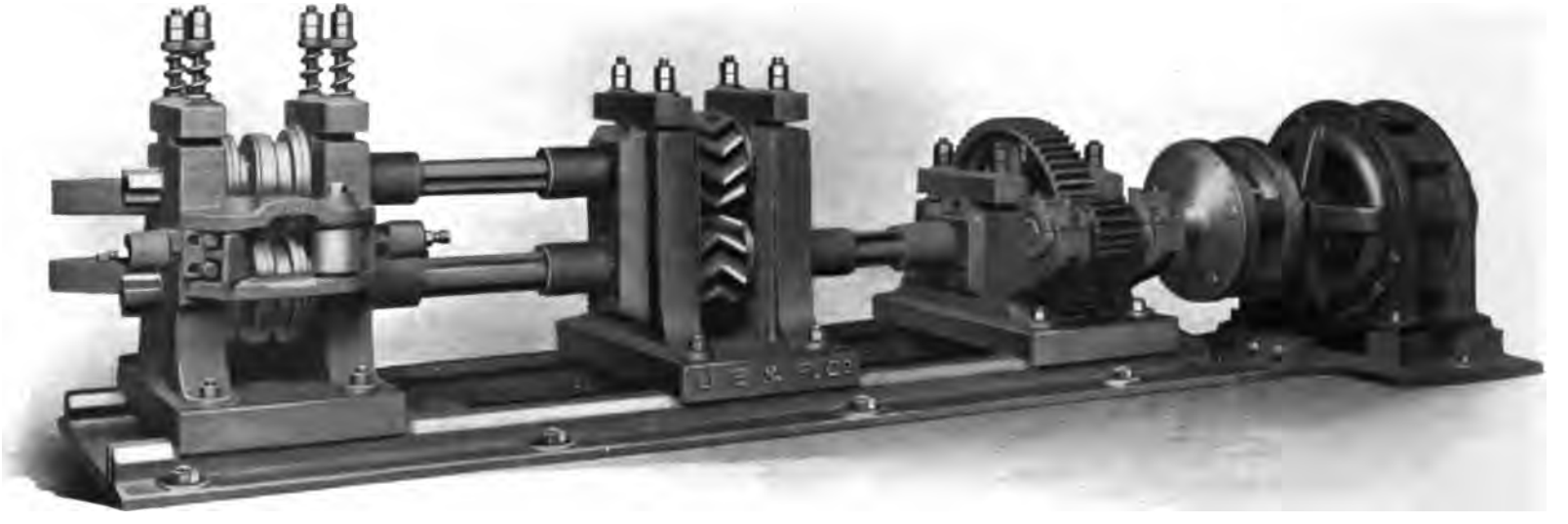


ILLUSTRATION No. 674

RAIL CAMBERING MACHINE

Motor driven

With independent gear frame and flexible motor coupling

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

ILLUSTRATION No. 509

RAIL CAMBERING MACHINE

Motor driven

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

TUBE WORKS MACHINERY

THE following pages illustrate a few sizes and types of the various tube working machines which we build. These are all of modern design, and constructed so as to give the greatest strength and wearing qualities, together with a maximum production at the lowest possible cost. We are in a position to give our customers the benefit of a long experience in this line, as we have designed and built tube works machinery since 1886.

Among the plants which we have designed and built are included the following:

Spang, Chalfant & Company	Aetna, Pa.
Youngstown Iron, Sheet and Tube Company	Youngstown, Ohio
La Belle Iron Works	Steubenville, Ohio
Mark Manufacturing Company	Chicago, Ill.
Coatesville Rolling Mill Company	Coatesville, Pa.
Parkesburg Iron Company	Parkesburg, Pa.
National Tube Company, Continental Plant	Pittsburg, Pa.
Thyssen & Company	Düsseldorf, Germany
Hahnsche Werke Actiengesellschaft	Berlin, N. W. Germany
Longmead Iron Company	Conshohocken, Pa.
Balcke, Tellering & Company	Benrath, Germany
Montreal Rolling Mill Company	Montreal, Canada
Reliance Tube Company	Pittsburg, Pa.
Page Hersey Iron Tube and Lead Company, Limited	Toronto, Canada

We are prepared to design and build complete equipment for all classes and sizes of tubular products for either seamless, lap or butt weld plants.

ILLUSTRATION No. 235 A

CLIPPING SHEAR

Motor driven

For butt weld pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

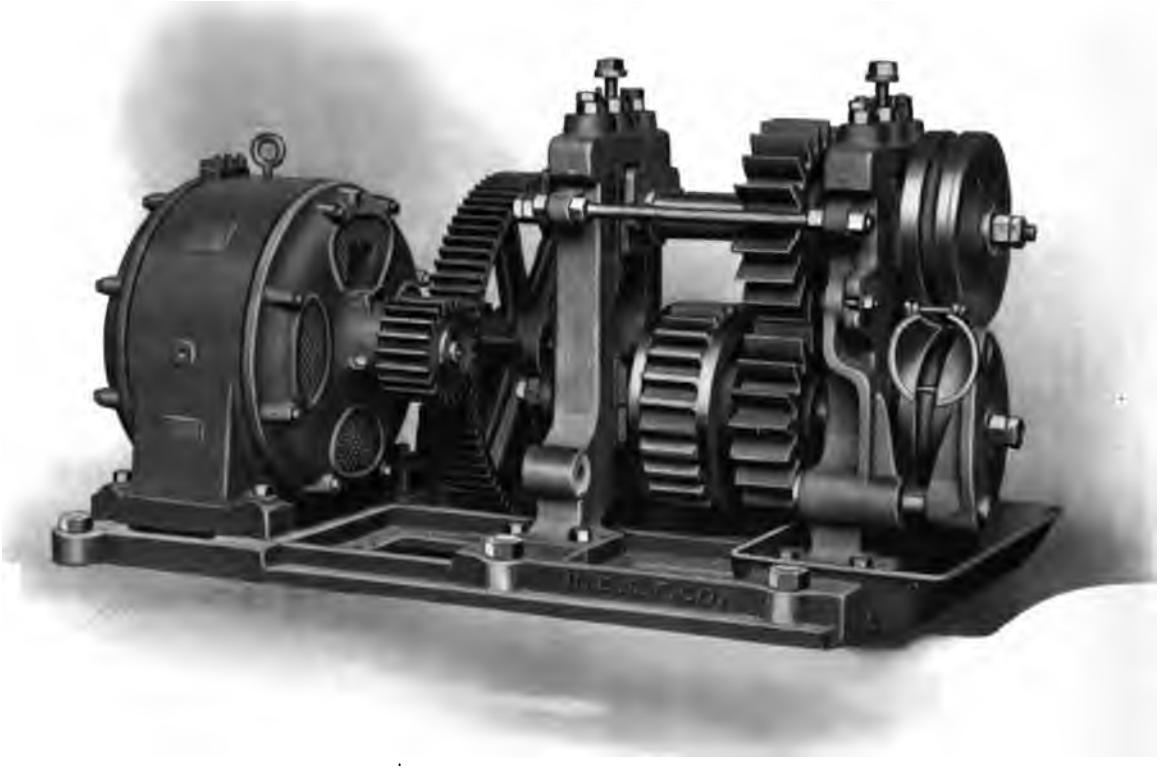


ILLUSTRATION No. 184

SIZING MACHINE

Motor driven

For ⅜-inch to 2-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 230 B

SIZING MACHINE

Motor driven

For 2-inch to 4-inch pipe

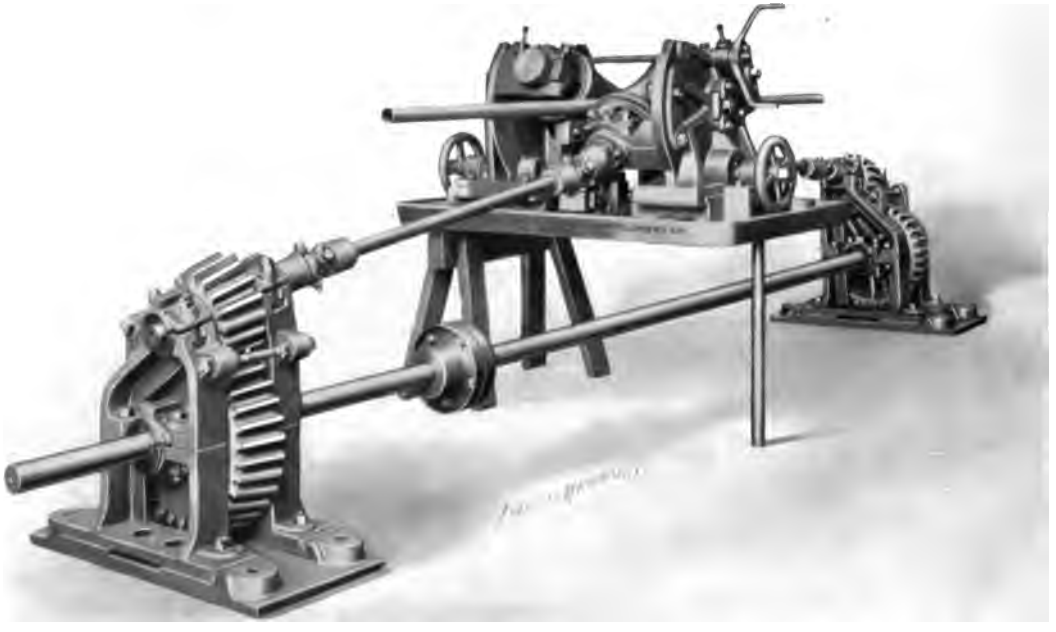


ILLUSTRATION No. 224 B

CROSS ROLL MACHINE

For ⅜-inch to 2-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 522

CROSS ROLL MACHINE AND COOLING RACK

For butt weld pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

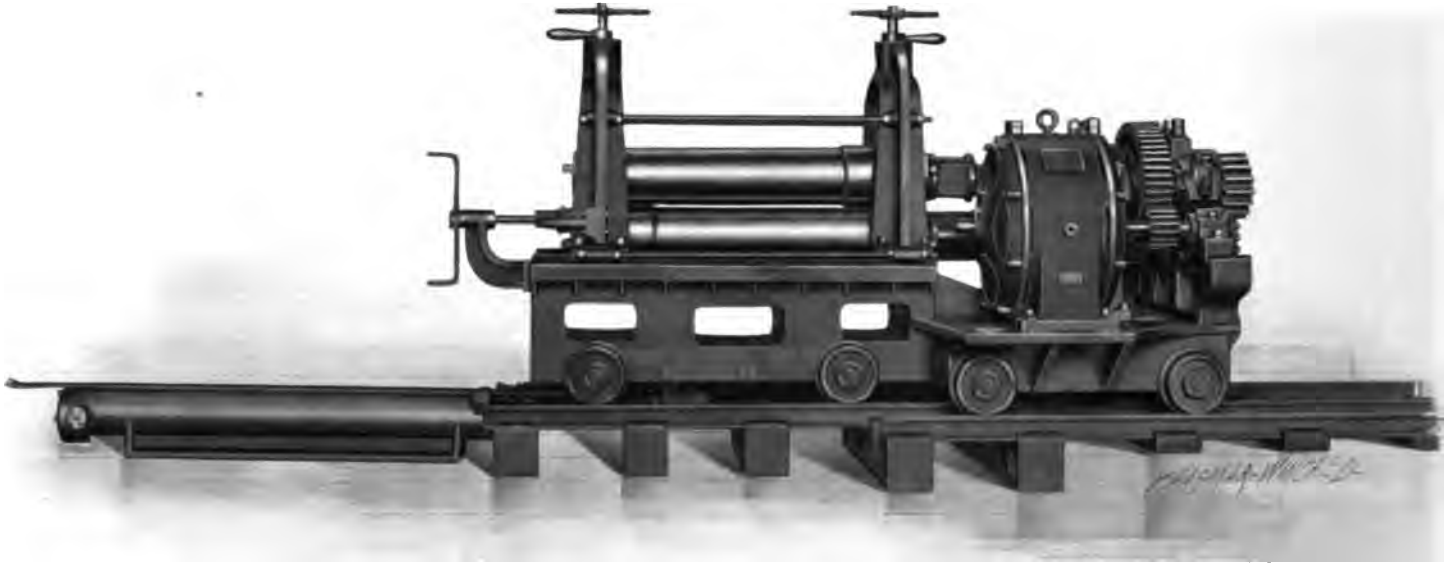


ILLUSTRATION NO. 116

MOVABLE HOT SCARFING MACHINE

Motor driven

For lap weld pipe. We also build a stationary hot scarfing machine

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

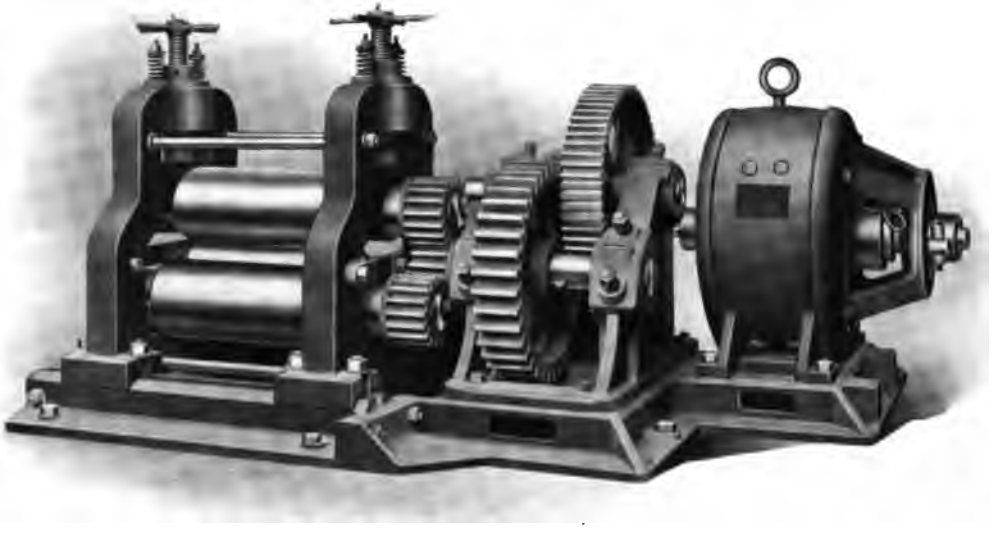


ILLUSTRATION No. 361

STATIONARY COLD SCARFING MACHINE

Motor driven

For lap weld pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

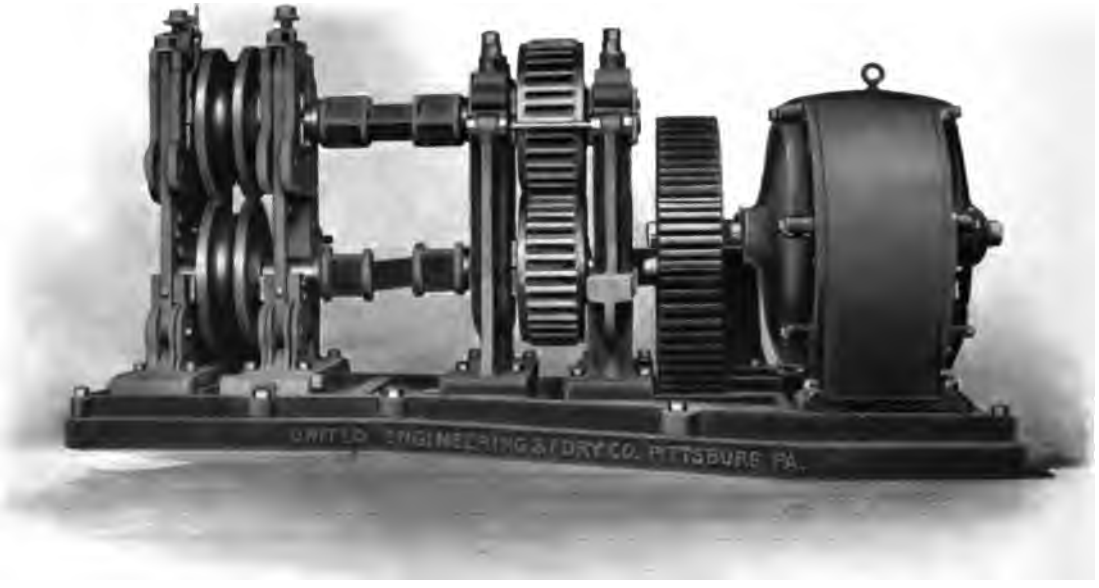


ILLUSTRATION No. 233 A

LAP WELDING MACHINE

Motor driven

For 6-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

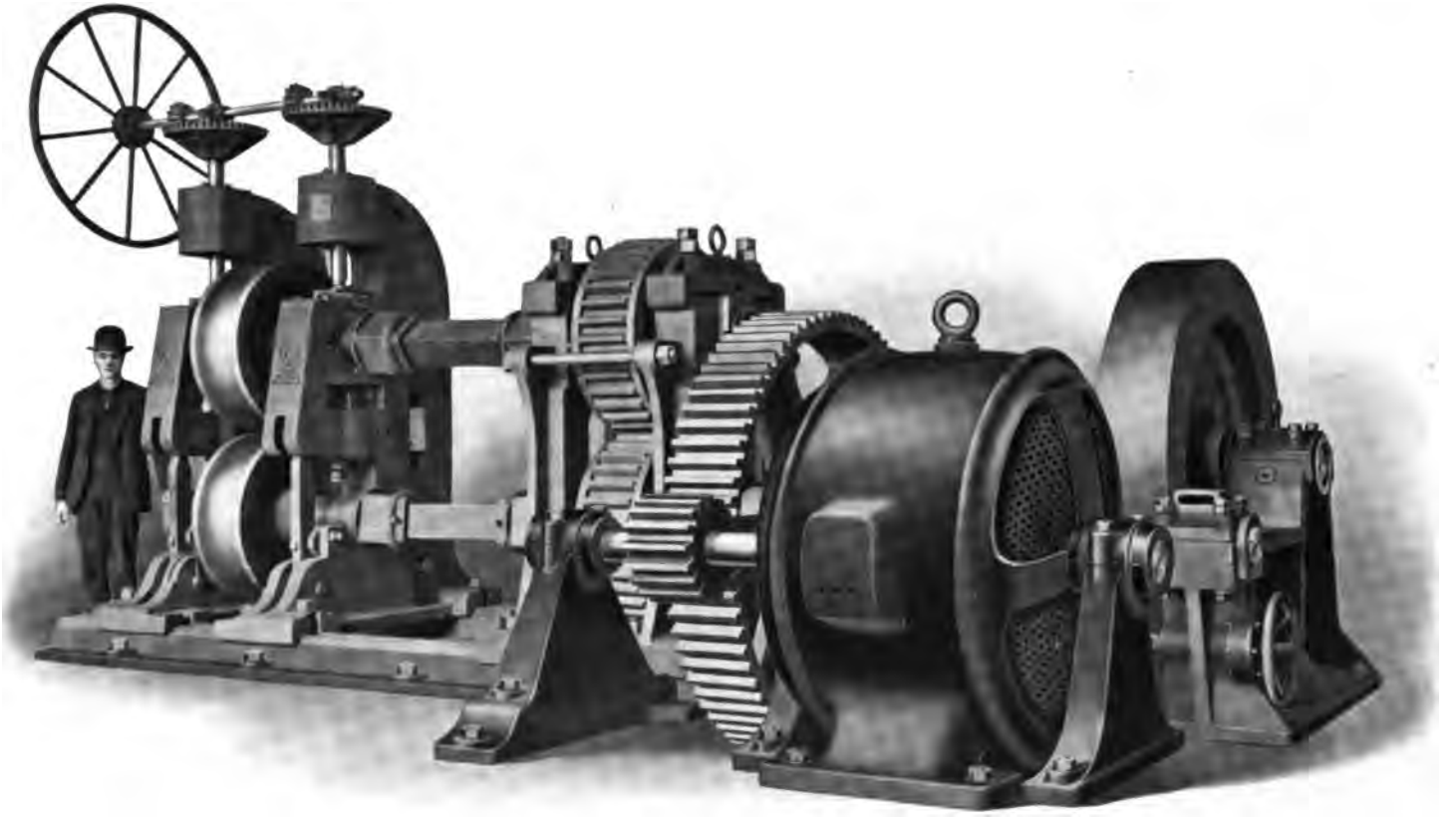


ILLUSTRATION No. 438

LAP WELDING MACHINE

Motor driven

For 16-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 367

BAR PULLER

Motor driven

For 2-inch to 8-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

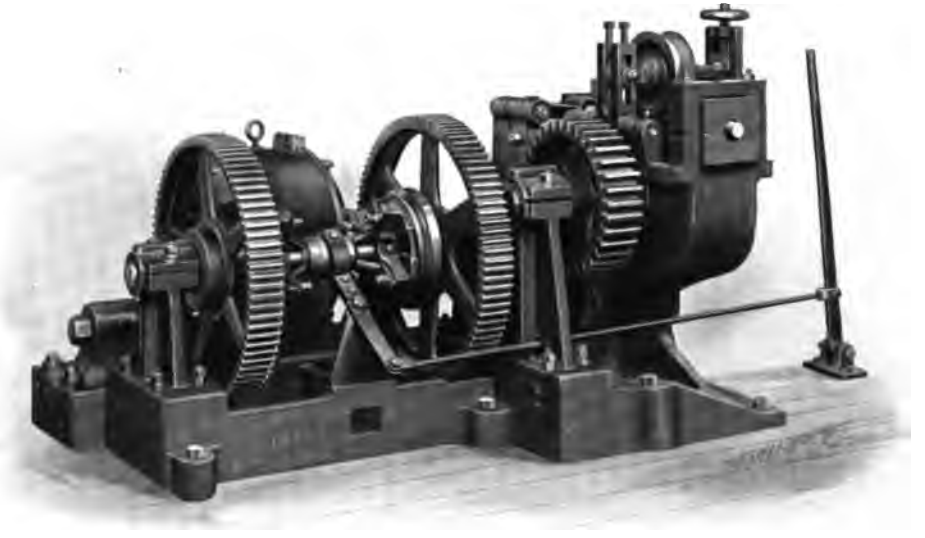


ILLUSTRATION No. 239

BAR PULLER

Motor driven

For 8-inch to 24-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 206

CROSS ROLL MACHINE

Motor driven

For 2-inch to 8-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 240

CROSS ROLL MACHINE

For 8-inch to 20-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

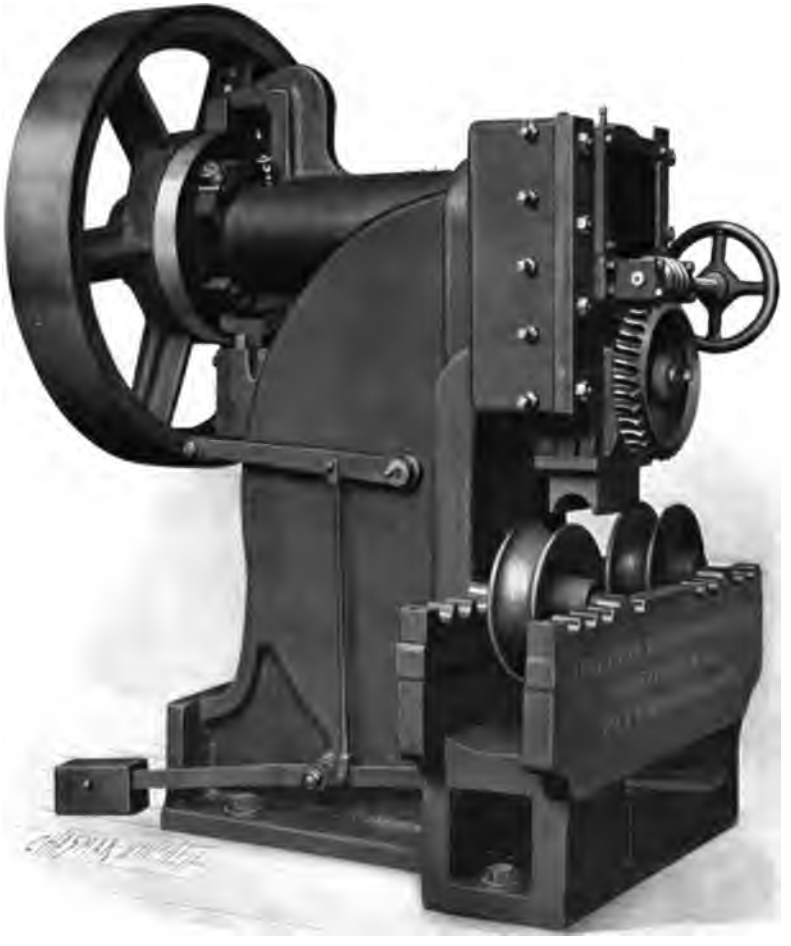


ILLUSTRATION No. 107

STRAIGHTENING PRESS

Belt driven

For 2-inch to 6-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

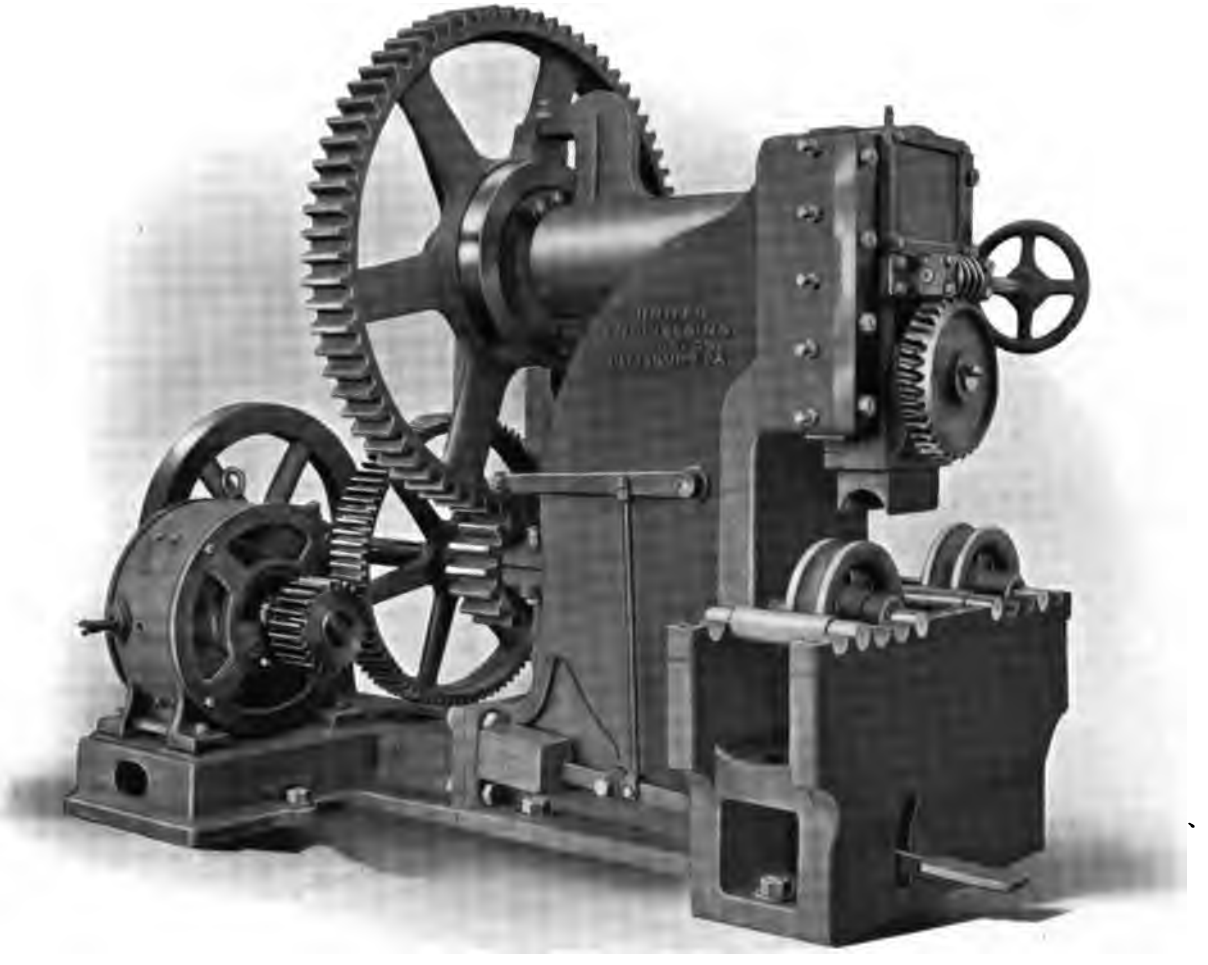


ILLUSTRATION NO. 386

STRAIGHTENING PRESS

Motor driven

For 2-inch to 8-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 105

STRAIGHTENING PRESS

Belt driven

For 2-inch to 12-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 187

PIPE CUTTER

Motor driven

For ⅛-inch to 8-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 291

TESTING MACHINE

For 2-inch to 8-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

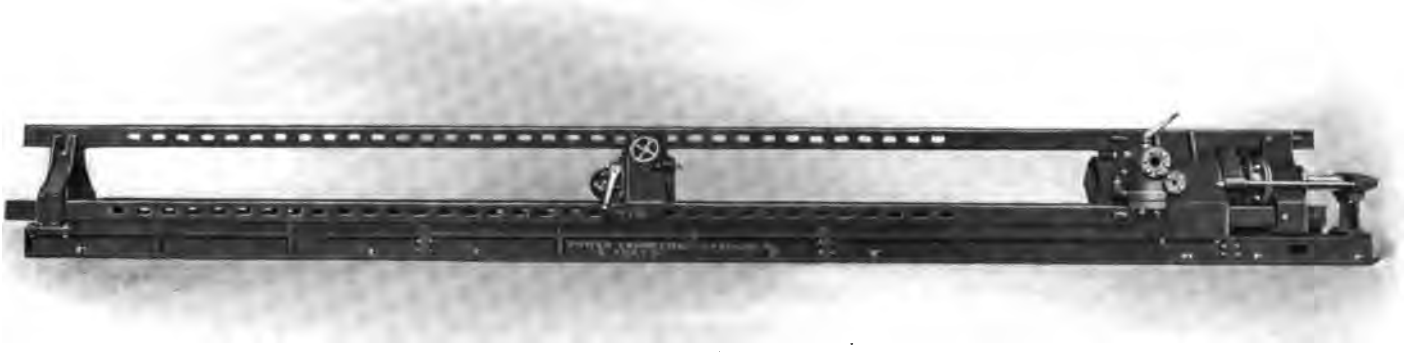


ILLUSTRATION NO. 169

TESTING MACHINE

For 6-inch to 12-inch and 10-inch to 24-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

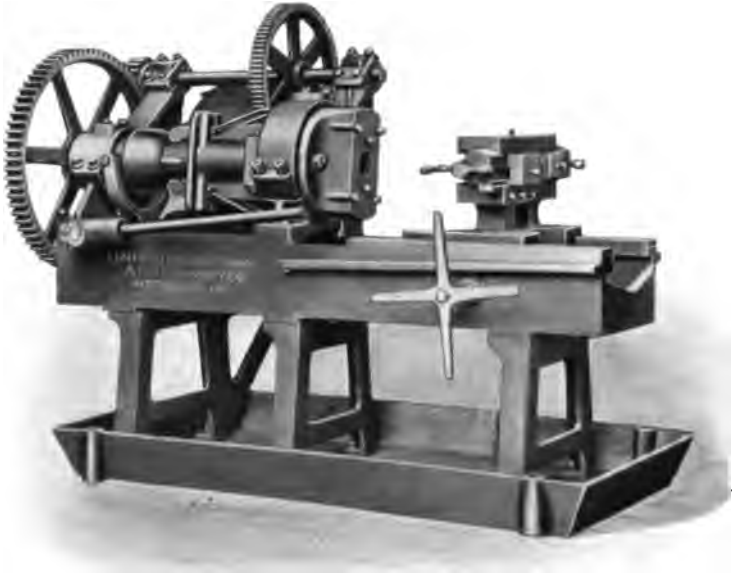


ILLUSTRATION No. 236

THREADING MACHINE

Motor driven

For ⅜-inch to 2-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 171

THREADING MACHINE

Motor driven

For 1-inch to 3-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 100

THREADING MACHINE

Motor driven

For 2-inch to 8-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

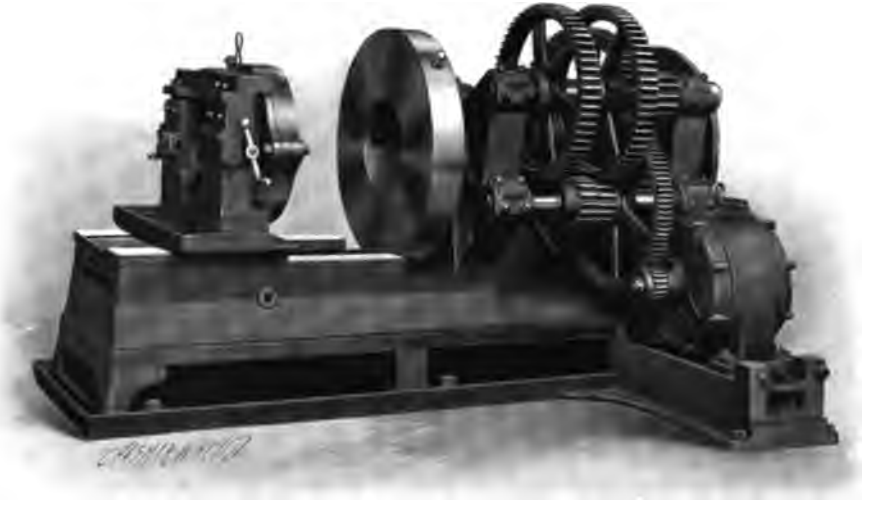


ILLUSTRATION NO. 189

THREADING MACHINE

Motor driven

For 6-inch to 12-inch pipe

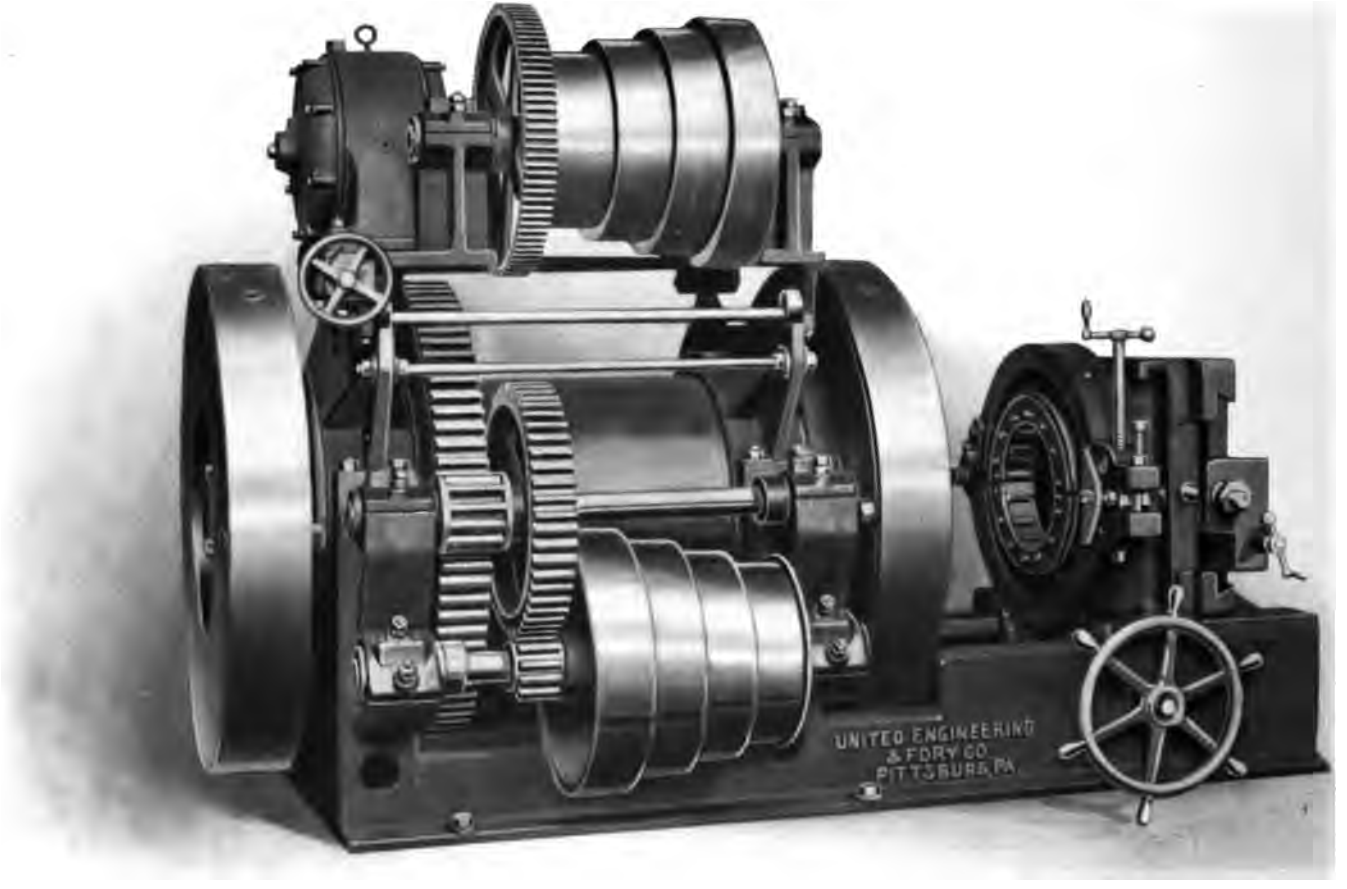


ILLUSTRATION No. 244

THREADING MACHINE

Motor driven

For 12-inch to 24-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

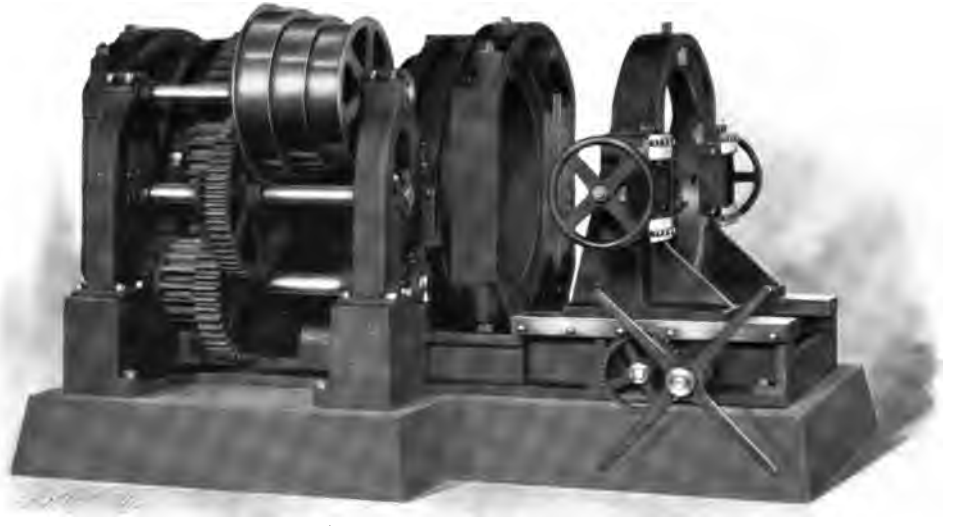


ILLUSTRATION No. 226

CUTTING-OFF MACHINE

Belt driven

For 30-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 242

FORMING SHEAR

Belt driven

For ⅛-inch to 1½-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

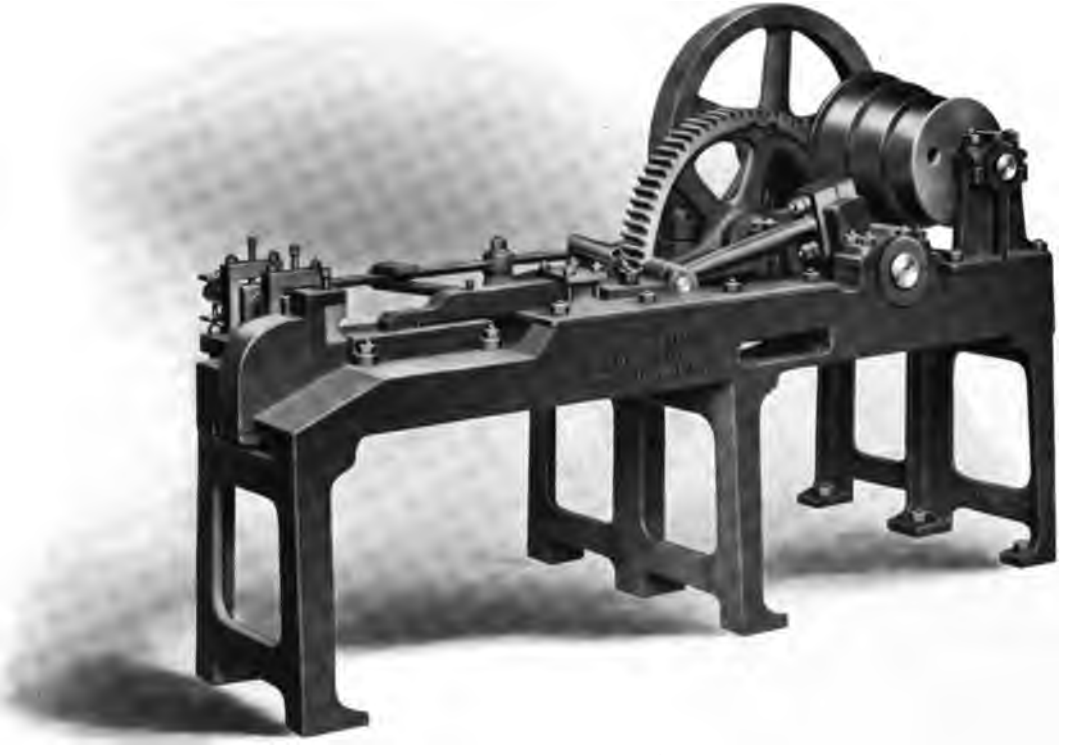


ILLUSTRATION No. 243

COLD COUPLING BENDING MACHINE

Belt driven

For ⅛-inch to 1½-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

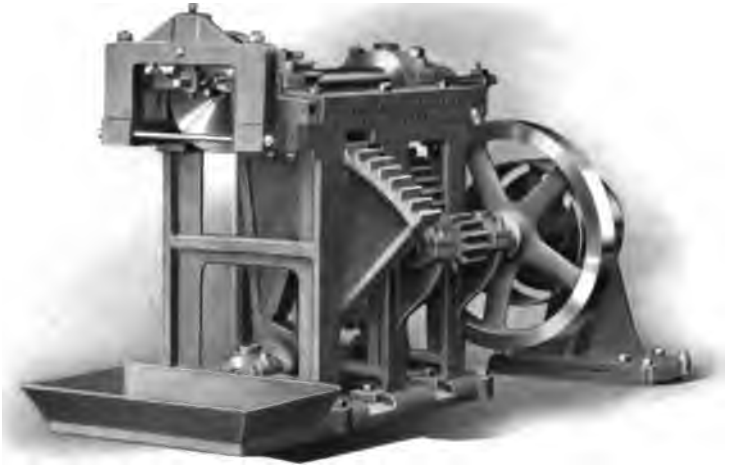


ILLUSTRATION No. 214

HOT COUPLING BENDING MACHINE

Belt driven

For ⅜-inch to 2-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 186

HOT COUPLING BENDING MACHINE

Belt driven

For 2-inch to 8-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION NO. 629

BEVEL SHEAR

Motor driven

For coupling bar

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

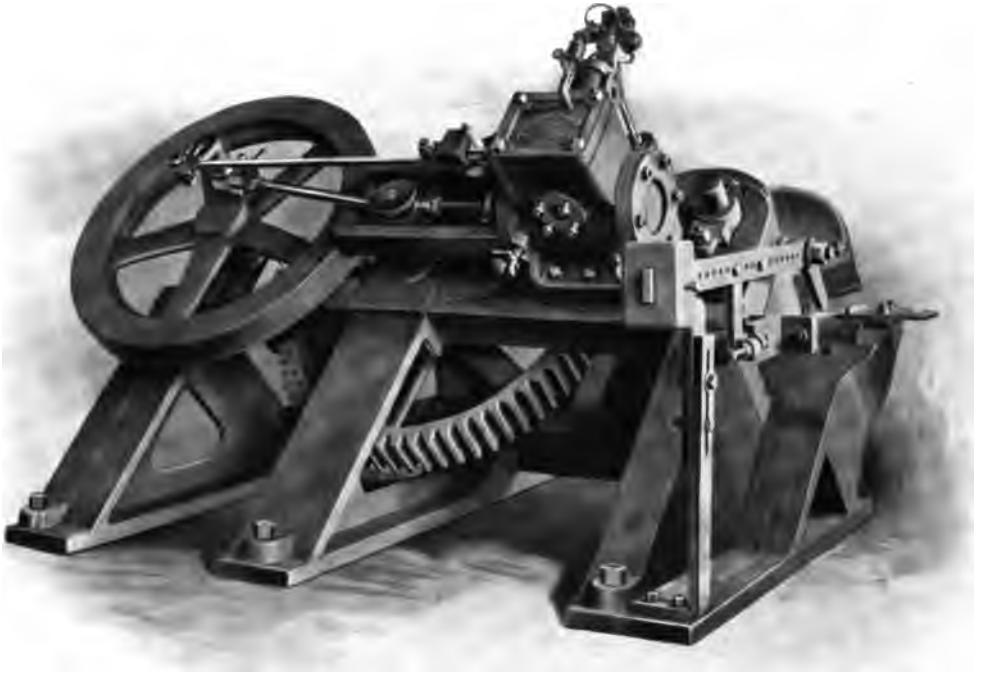


ILLUSTRATION No. 193 A

BEVEL SHEAR

Engine driven

For coupling bar. Arranged with gauge

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

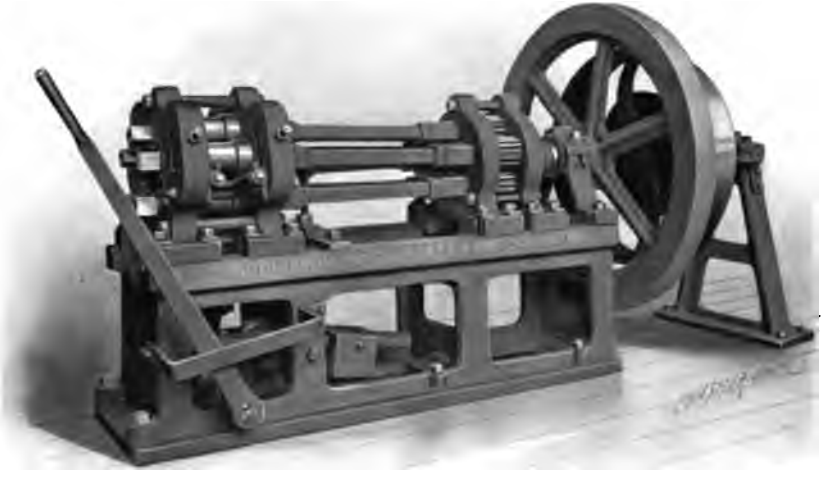


ILLUSTRATION No. 215

HOT COUPLING ROLLING MACHINE

Belt driven

For ¾-inch to 4-inch couplings

Patented September 29, 1903, August 2, 1904

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

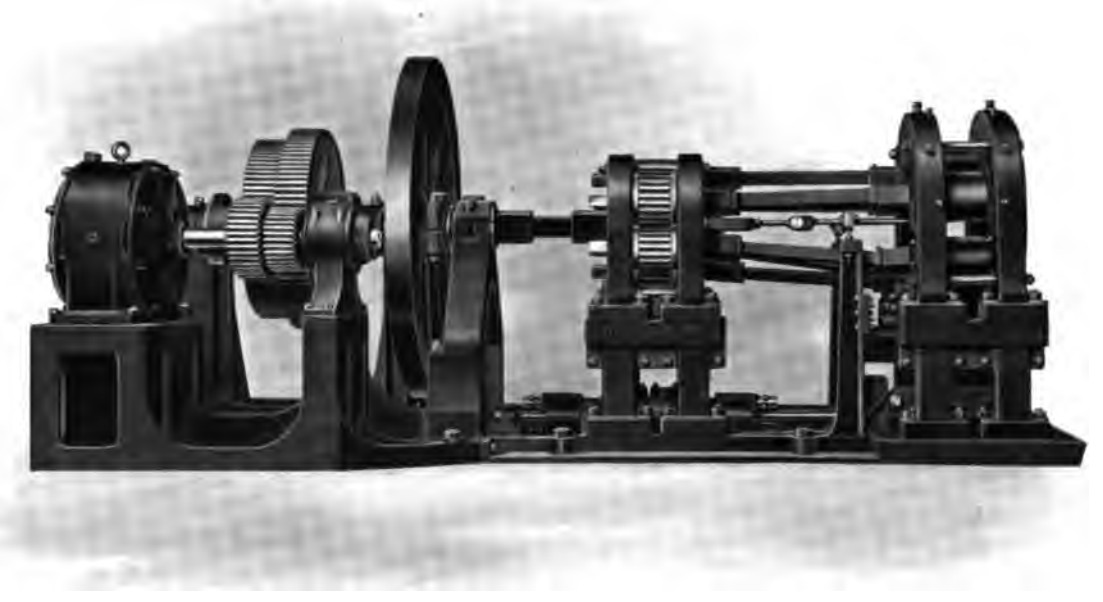


ILLUSTRATION No. 275

HOT COUPLING ROLLING MACHINE

Motor driven

For 4-inch to 12-inch couplings

Patented September 29, 1903, August 2, 1904

ILLUSTRATION No. 216

HYDRAULIC MANDRIL EXTRACTOR

For ¾-inch to 4-inch couplings

ILLUSTRATION No. 241

MANDRIL EXTRACTOR

Motor driven

For ¾-inch to 4-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 117

HYDRAULIC COUPLING EXPANDER

For 2½-inch to 4½-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 118

HYDRAULIC COUPLING EXPANDER

For 5-inch to 12-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

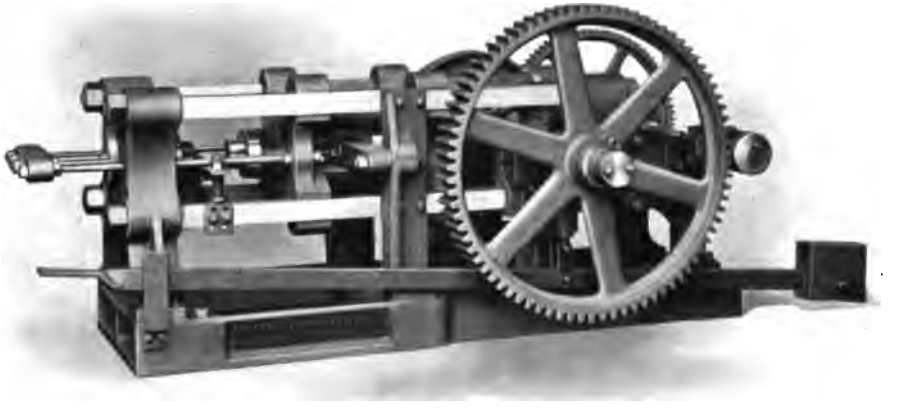


ILLUSTRATION No. 106

COUPLING EXPANDER

Motor driven

For 2½-inch to 4½-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

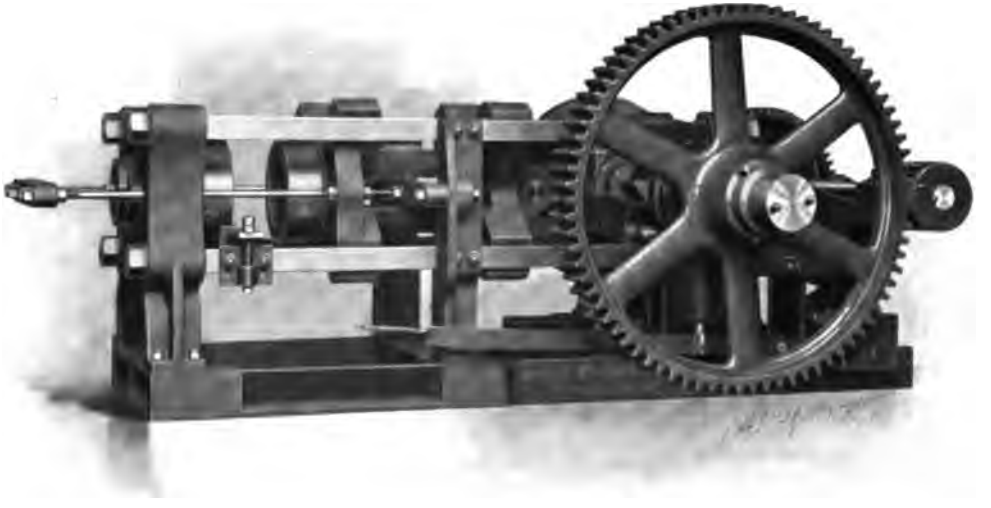


ILLUSTRATION No. 188

COUPLING EXPANDER

Motor driven

For 5-inch to 12-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

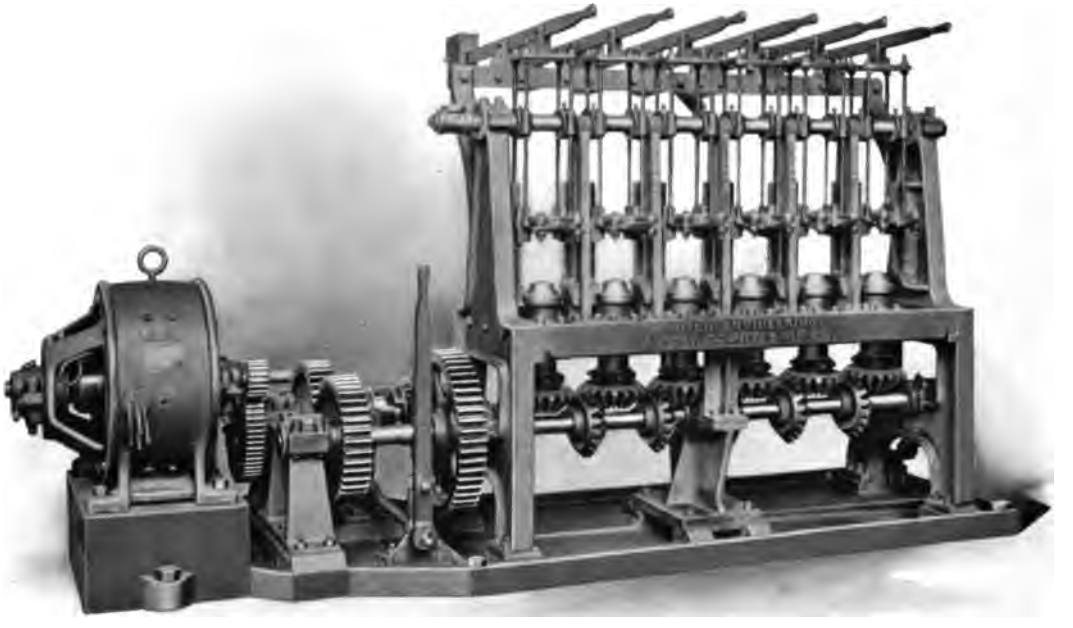


ILLUSTRATION No. 375

COUPLING TAPPING MACHINE

Motor driven

For ⅛-inch to ¾-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

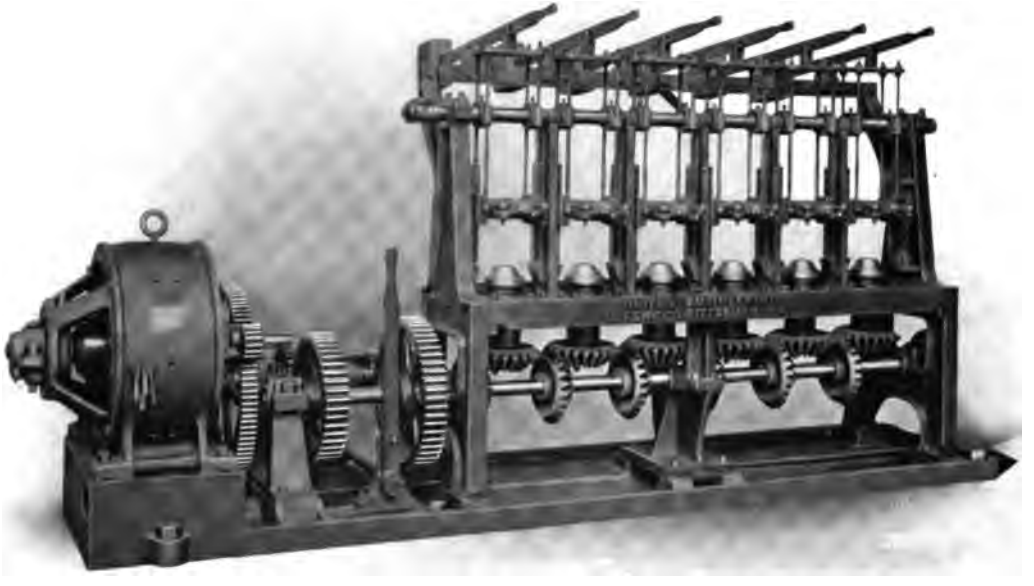


ILLUSTRATION No. 376

COUPLING TAPPING MACHINE

Motor driven

For ½-inch to 1¼-inch couplings

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

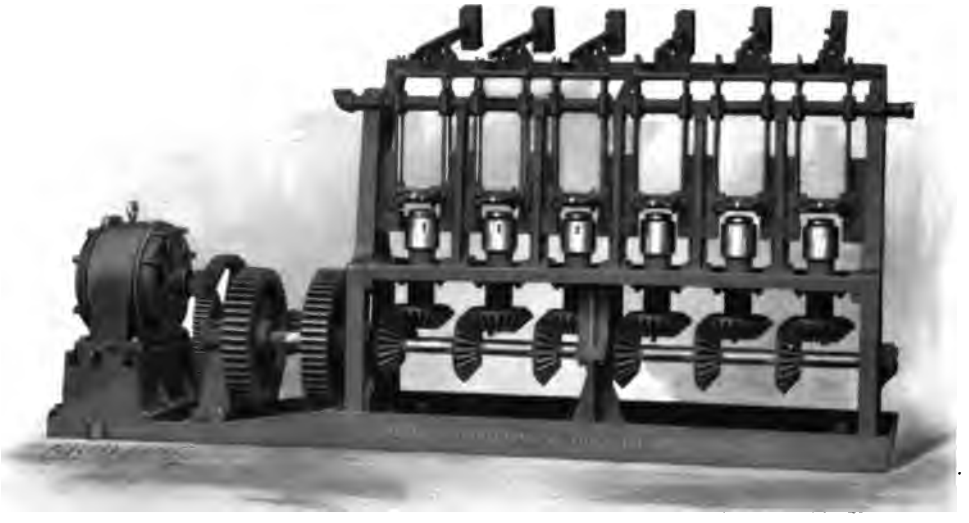


ILLUSTRATION No. 200

COUPLING TAPPING MACHINE

Motor driven

For 1-inch to 3-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

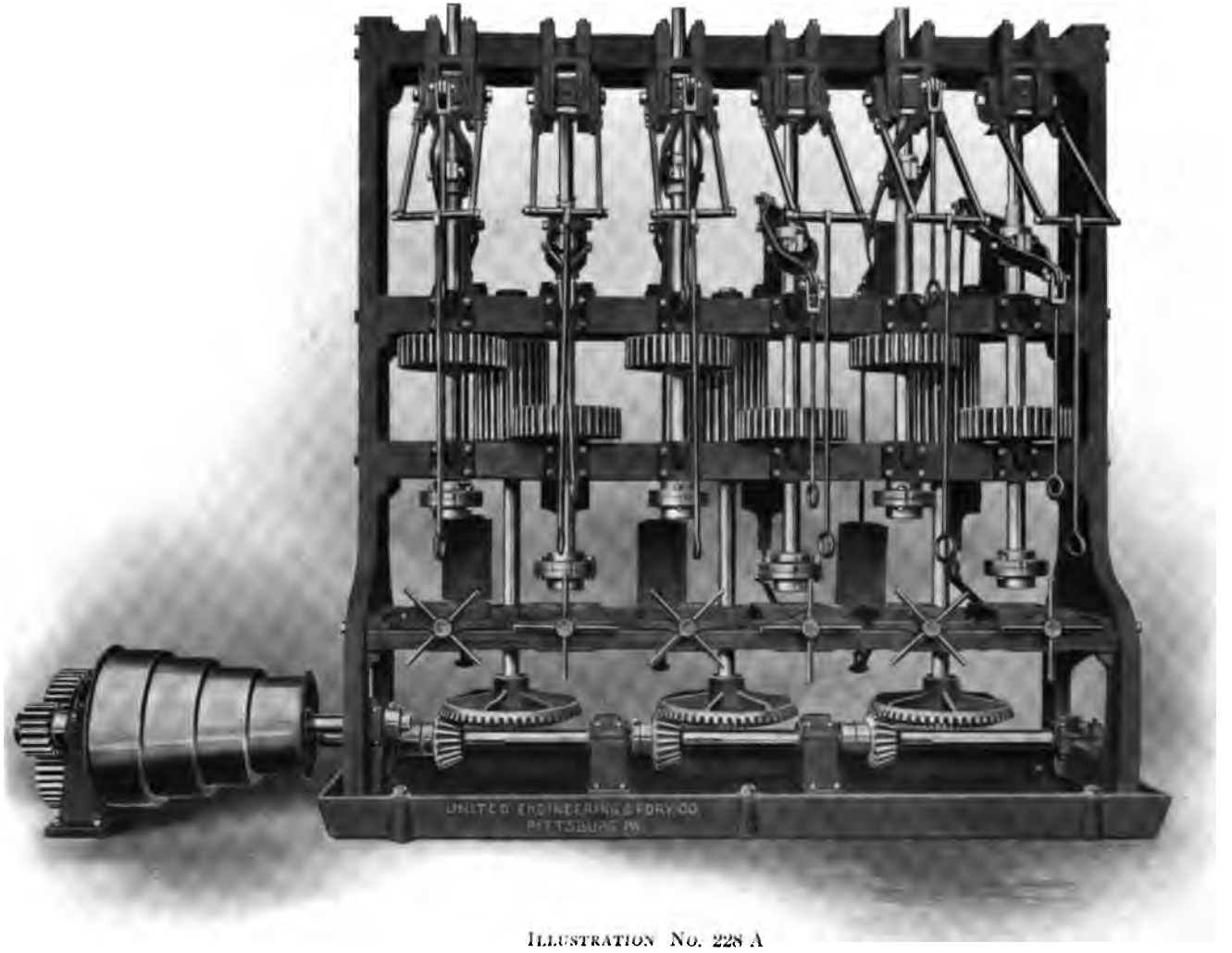


ILLUSTRATION NO. 228 A

COUPLING TAPPING MACHINE

Belt driven

For 1¼-inch to 4-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 232

COUPLING TAPPING MACHINE

Motor driven

For 4-inch to 8-inch, 6-inch to 12-inch and 10-inch to 20-inch pipe

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

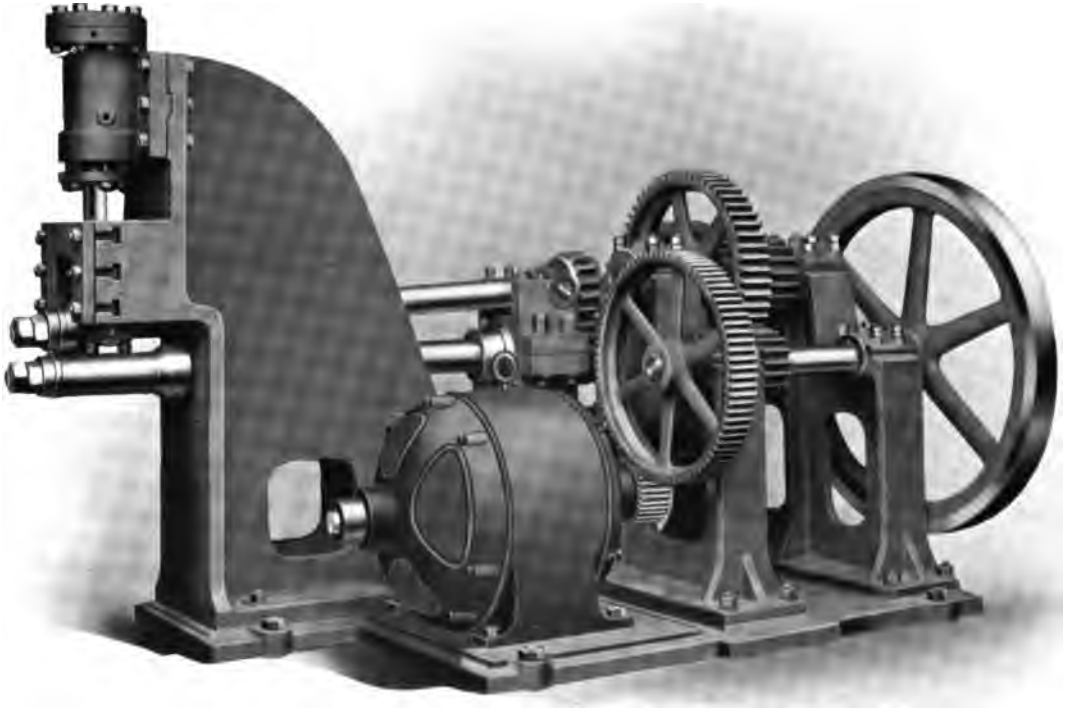


ILLUSTRATION NO. 434

ROTARY SHEAR

Motor driven

For 4-inch to 16-inch pipe

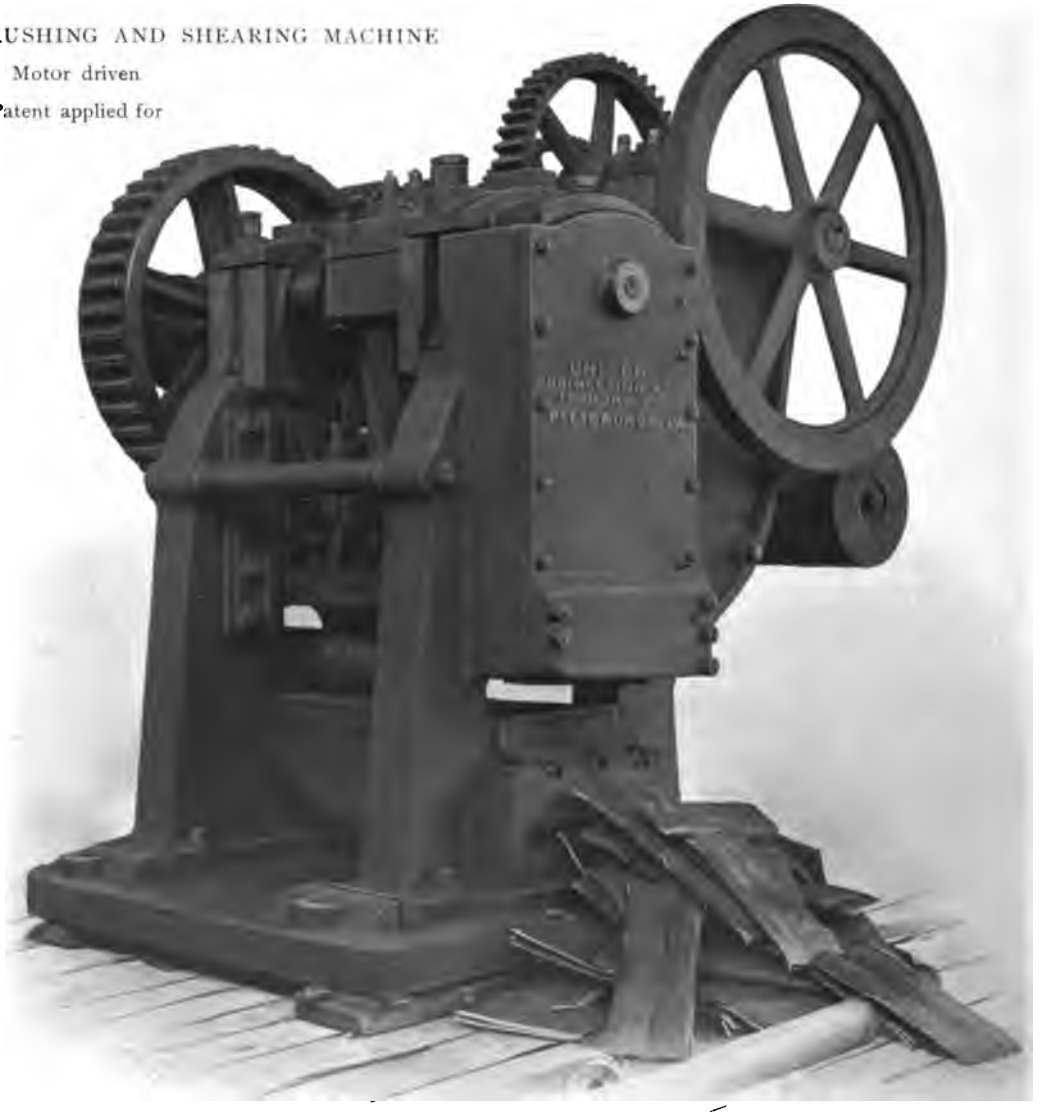
UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

ILLUSTRATION No. 432

COMBINATION PIPE CRUSHING AND SHEARING MACHINE

Motor driven

Patent applied for



UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

This machine is designed to crush and shear wrought iron and steel pipe in one operation, this work being usually done with two separate machines, the pipe first being flattened under a steam or drop hammer, and then sheared up in another machine to the proper length. As this machine covers both operations in one, a great saving is accomplished in handling material, and only one-half of the labor and power is required. Another advantage is that the pipe can be crushed without shearing, by simply feeding into the side of the machine, instead of the end. As all gearing and driving mechanism is overhead, there is a free space around the entire machine for the operator to work in, thus enabling easy and rapid operation and handling of material.

These machines are of heavy construction, all parts being of ample size to insure great strength and rigidity, so that the machine can withstand rough usage and does not require skilled labor to operate it. The driving power can be either steam, belt or electric, with the engine or motor direct-connected.

Built for all sizes and lengths of wrought iron or steel pipe.

ILLUSTRATION No. 810

COMBINATION PIPE CRUSHING AND SHEARING MACHINE

Motor driven

With hydraulic safety device

Patent applied for

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

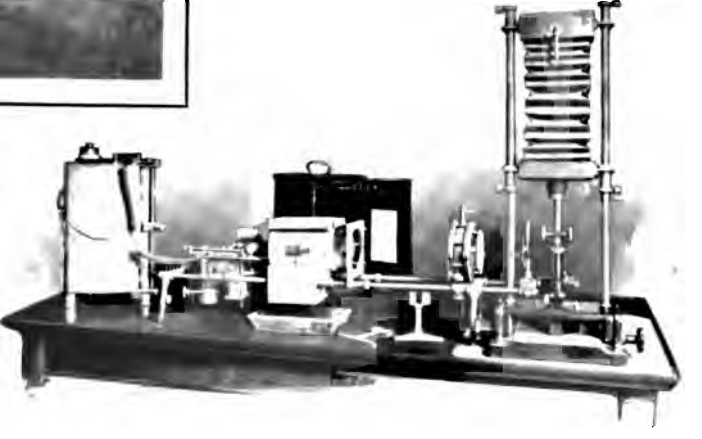
STEEL FOUNDRY DEPARTMENT

AS a result of the constant increase in the use of steel castings in the construction of rolling mill and all classes of heavy machinery during the past few years, we have found it necessary to make large additions to the buildings and equipment of our Steel Foundry Department, and while we make a specialty of steel castings for rolling mill machinery, our large capacity of 2000 tons production per month gives us the opportunity of furnishing steel castings for many other purposes, and enables us to furnish the highest grade of castings possible, and to make prompt deliveries. (See views of Steel Foundry on pages 18, 27, 28, 29, 30, 31, 32 and 33.)

LABORATORY AND TESTING ROOM

Both our laboratory and testing room have most modern equipment, and are in daily use, which insures accurate results in the foundry. This department is under the direct supervision of a practical chemist who gives it his entire attention. The laboratory has direct telephone connection with the open hearth furnaces, which permits the melter and the chemist to consult without delay. This system of close chemical analysis enables us to produce castings of special mixtures, such as nickel steel, vanadium steel, etc., and assures accurate control of either high or low carbon.

INTERIOR OF LABORATORY



MICROSCOPIC CAMERA

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA

CAST STEEL HOUSING FOR SPINDLE CARRIER

CAST STEEL ROLLS

Steel rolls have become invaluable to the present-day rolling mill practice for the reason that they are so much stronger than cast-iron rolls of a like diameter and can, therefore, in certain operations, do successfully the work that would cause roll breakages or reduced outputs where sand or chilled rolls are used. Steel is used almost exclusively for blooming and other mills where a large mass of metal

ANNEALING

The annealing of steel castings is very important, as this process removes all strains, and changes the coarse grain shown by a fracture of the metal as cast, to a much finer and closer structure. Our equipment for this work is most modern and the large capacity of our annealing ovens prevents any delays and also allows ample time for proper annealing.

CAST STEEL CAP FOR ROLL HOUSING

is to be roughed down for finishing to merchant shapes, and where the housings limit the size of rolls, so that if cast-iron rolls were used they would not be strong enough to stand the work demanded of them.

In case of flask cooling, or flask annealing, as it is sometimes called, it is our practice to leave the casting in the mold until entirely cooled. (Note cuts illustrating fracture of test bar from .40 carbon heat before and after annealing.)

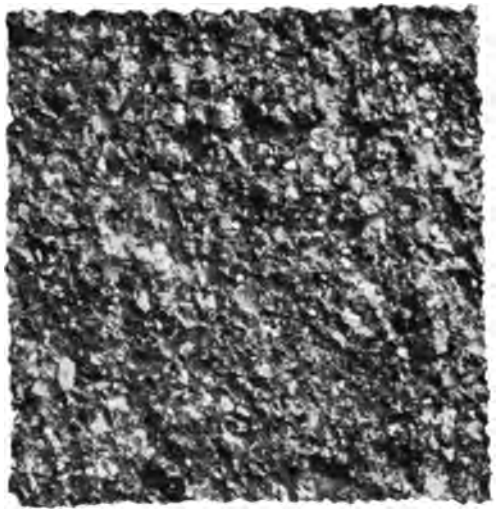
CAST STEEL ROLL READY FOR SHIPMENT

CAST STEEL ROLL WITH HEAD

In order to obtain a thoroughly sound top neck and coupling, we cast the top neck plain and machine in the top wabbler. (Note cut showing cast steel roll with head, and same roll ready for shipment.) All steel rolls are cast as close to size as good practice will permit and the same rigid inspection is made before shipment, as is employed on our iron rolls.

Generally speaking, the specifications for steel rolls for roughing vary from .40 carbon

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA



UNANNEALED STEEL SECTION

ANNEALED STEEL SECTION

CAST STEEL ROLLS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

COMPLETED MOLD FOR LARGE MACHINE MOLDED GEAR RIM

MACHINE MOLDING BEVEL GEAR

CAST STEEL ROLLS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

CAST STEEL MACHINE MOLDED MILL PINIONS

to .65 carbon, and for rolls for finishing from .85 to 1.25 carbon.

We are also prepared to furnish rolls from special mixtures of nickel steel, vanadium steel, etc.

All of our steel rolls are made by acid steel open hearth process from the best selected stock. Each heat is carefully made up by a metallurgist who is a specialist in this line

CAST STEEL
CUT GEARS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

and who gives his attention also to the proper annealing of the rolls.

A recording pyrometer is used to govern the heat control of the annealing operation.

We are prepared to furnish rolls to suit any requirements and are always glad to give customers the benefit of our advice when formulating their specifications.

CAST STEEL MACHINE MOLDED MITRE GEARS

CAST STEEL
MACHINE MOLDED
BEVEL GEARS

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

CAST STEEL GEARS AND MILL PINIONS

Cast steel gears have superseded cast-iron gears to a large extent due to superior wearing qualities and greater strength, and we are prepared to furnish all classes of steel gearing with either pattern or machine molded teeth or with cut teeth.

Cut gears are indispensable for high speed and for certain classes of machinery where great accuracy and smooth running are essential, while pattern molded gears are usually applied to the heavier classes of machinery where such a high degree of accuracy is not required or where the design is such that cutting the teeth is impossible, as in the case of shrouded gears.

CAST STEEL GEAR BLANK FOR CUT GEAR THIRTEEN FEET IN DIAMETER

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

MACHINE MOLDED GEARS AND PINIONS

Machine molded gears and mill pinions are rapidly growing in favor. They are much superior to pattern molded gears as all teeth are made from the same tooth block or pattern, insuring their uniformity, while the pattern molded gear has every tooth made from a different pattern. Machine molding also eliminates the taper or draft necessary in a pattern molded gear, as in making machine molded gears the tooth block is drawn horizontally away from the mold for spur and worm gears. While machine molded gears are not as exact as cut gears, they are less costly and have the advantage of being produced in any style of tooth, and, owing to their accuracy, run smoother, quieter and require less power to drive than pattern molded gears. Where but one or two gears of a size are required, it is often cheaper to purchase these machine molded, avoiding the expense of making a pattern.

MACHINE MOLDED GEAR RIM CAST IN ONE PIECE—LOADED FOR SHIPMENT

No other class of gearing is subject to more severe strains and shocks than mill pinions. We, therefore, select the very highest grade materials and use the greatest of care throughout their entire manufacture. Cast steel pinions are preferable to cast-iron, as they are stronger and wear better. Our standard for cast steel mill pinions is, carbon .40 to .50, phosphorus under .05, sulphur under .04, thoroughly furnace annealed. Where the service is very severe, as in large reversing mills, etc., nickel and vanadium steel are sometimes used with economy. We are prepared to furnish castings of the very highest quality made from these and other special mixtures.

CAST STEEL MACHINE MOLDED DOUBLE PINION

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

UNITED ENGINEERING & FOUNDRY COMPANY
PITTSBURG, PA.

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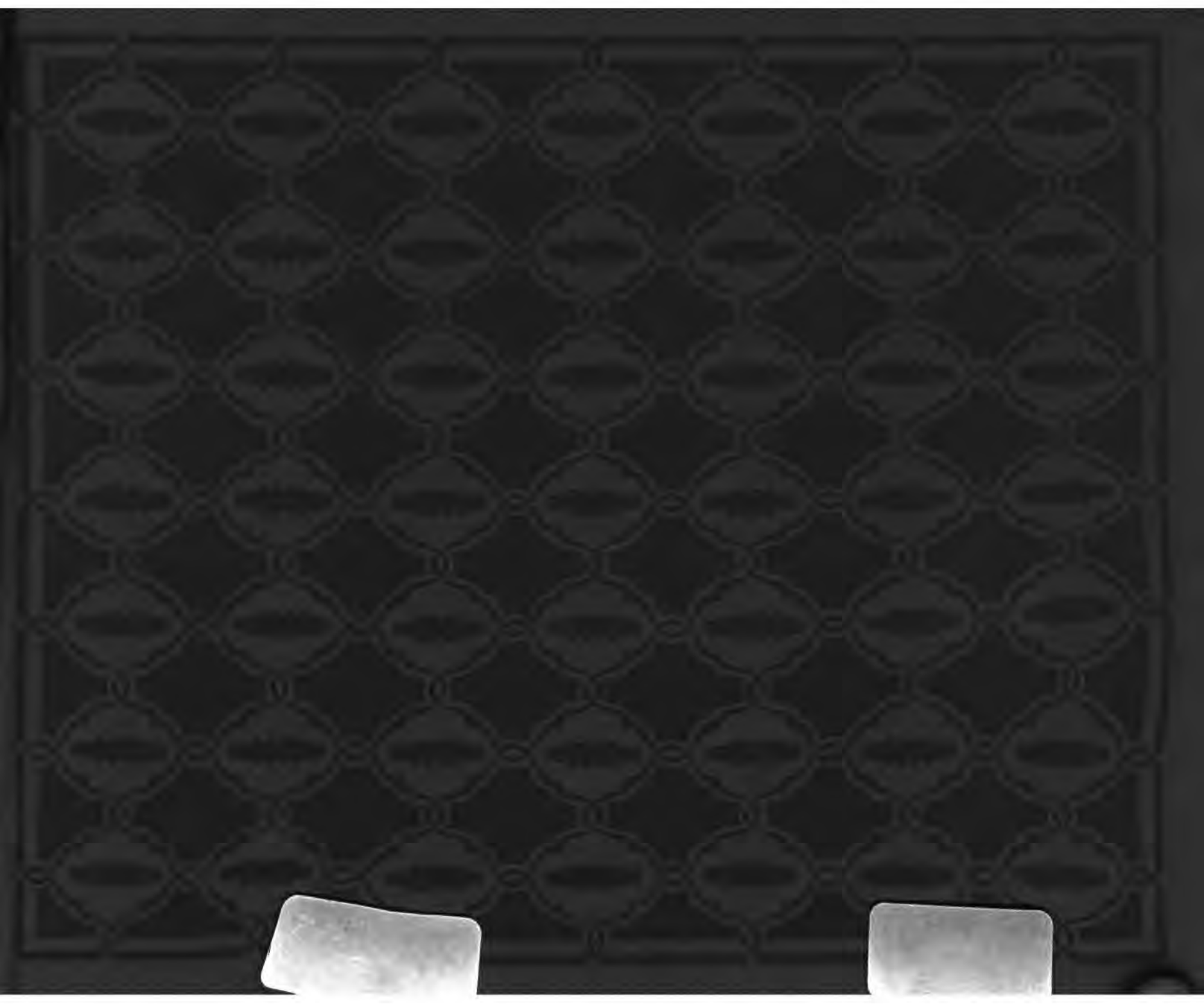

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